REFRIGERATOR

BOTTOM MOUNT FREEZER

BASIC : RFG297AA

MODEL NAME : RFG297AARS
RFG297AABP
RFG297AAWP
RFG297AAPN

MODEL CODE : RFG297AARS/XAA
RFG297AABP/XAA
RFG297AAWP/XAA
RFG297AAPN/XAA

SERVICE Manual

REFRIGERATOR

RFG297AA

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For the latest parts information, Please access to our service web site
(● North America : http://service.samsungportal.com)

WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service men with adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or dealer cannot be responsible for the interpretation of this information.

SAMSUNG ELECTRONICS AMERICA, INC.

Technical Service Guide

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1. PRECAUTIONS(SAFETY WARNINGS)

- Unplug the appliance before the changing or repairing the electric parts.
→ Be careful the electric shock.

- When exchanging the parts, use the correct parts.
→ Check the model name, rating voltage, rating current, running temperature symbols.

- When troubleshooting, connect firmly the types of harness.
→ Make not to be separated when some power is imposed.

- Check the traces of water infiltration at the electric parts.
→ If there is a trace of water infiltration, exchange or tape the parts.

- Check the assemble status of parts after troubleshooting.
→ It must be in the same assembled state when compared with the state before disassembly.

- Check the use circumstance of refrigerator.
→ If the refrigerator is installed at the place that is damp or wet, or status of installation is unstable, change the installation place.

- Ground the refrigerator properly
→ Particularly, Be sure to earth when there is a risk of an electric leakage by humidity or wetness.

- Do not use multi plugs in a plug socket at the same time.
Check if the power cord and socket is damaged, pressed, squeezed, or fired.
→ If the plug or plug socket is damaged, repair or exchange it immediately.

- Do not allow consumers to repair the appliance by themselves.

- Do not store other materials except the foods.
→ Drugs or scientific materials : difficult to keep precise temperature.
→ The inflammables(alcohol, benzene, ether, LP gas, butane gas etc.): have risk of explosion.

PRECAUTIONS(SAFETY WARNINGS)

Read all instructions before repairing the product and follow the instructions in order to prevent danger or property damage.
Plug out and remove all the items in regrigerator prior to repair.

CAUTION/WARNING SYMBOLS DISPLAYED

Warning	*Indicates that a danger of death or serious injury exists.*
Caution	*Indicates that a risk of personal injury or material damage exists.*

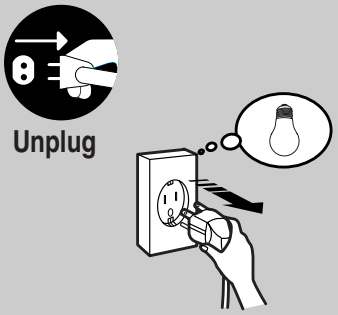
SYMBOLS

	means "Prohibited".
	means "Do not disassemble".
	means "No contact".
	means "Warning or Caution".
	means "Unplug the unit before preforming service"
	means "Earth or Ground".

Warning & Caution

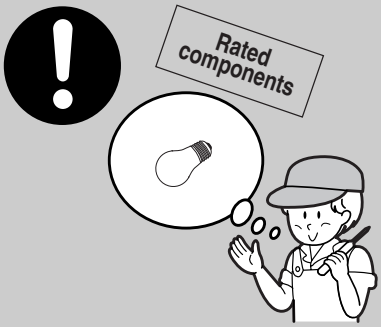
Plug out to exchange the interior lamp.

- *It may cause electric shock.*



Use the rated components on the replacement.

- *Check the correct model, rated voltage, rated current, operating temperature and so on.*



On repair, make sure that the wires such as harness are bundled tightly.

- *Bundle tightly wires in order not to be detached by the external force and then not to be wetted.*

On repair, remove completely dust or other things of housing parts, harness parts, and check parts.

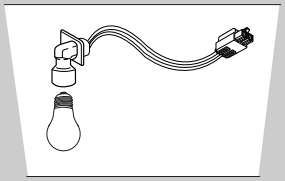
- *Cleaning may prevent the possible fire by tracking or short.*

After repair, check the assembled state of components.

- *It must be in the same assembled state when compared with the state before disassembly.*

Check if there is any trace indicating the permeation of water.

- *If there is that kind of trace, change the related components or do the necessary treatment such as taping using the insulating tape.*



PRECAUTIONS(SAFETY WARNINGS)

✻ Please let users know following warnings & cautions in detail.

Warning & Caution

Do not allow users to put bottles or kinds of glass in the freezer.

- *Freezing of the contents may inflict a wound.*

Do not allow users to store narrow and lengthy bottles or foods in a small multi-purpose room.

- *It may hurt you when refrigerator door is opened and closed resulting in falling stuff down.*

Do not allow users to store pharmaceutical products, scientific materials, etc., in the refrigerator.

- *The products which need precise temperature control should not be stored in the refrigerator.*

Do not allow users to plug several appliances into the same power receptable.

- *May cause abnormal generation of heat or fire.*

Do not allow users to disassemble, repair or alter.

- *It may cause fire or abnormal operation which leads to injury.*

Do not allow users to bend the power cord with excessive force or do not have the power cord pressed by heavy article.

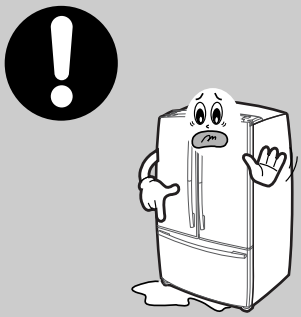
- *May cause fire.*

Do not allow users to store articles on the product.

- *Opening or closing the door may cause things to fall down, which may cause injury.*

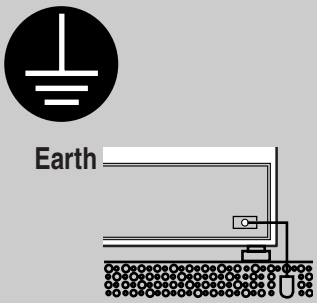
Do not allow users to install the refrigerator in the wet place or the place where water splashes.

- *Deterioration of insulation of electric parts may cause electric shock or fire.*



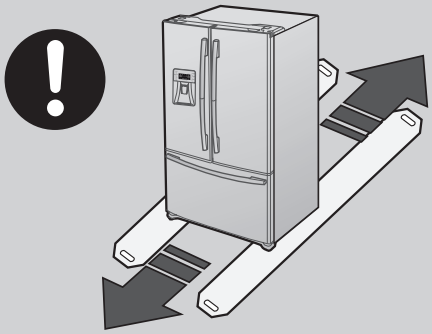
Make sure of the earth.

- *Be sure the product is properly grounded.*



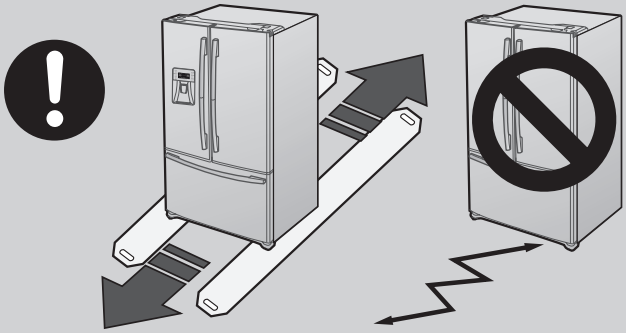
FLOORING

For proper installation, this refrigerator must be placed on a level surface of hard material that is the same height as the rest of the flooring. This surface should be strong enough to support a fully loaded refrigerator, or approximately 660lbs(299kg).



MOVING

Protect the finish of the flooring. Cut a large section of the cardboard carton and place under the refrigerator where you are working. When moving, be sure to pull the unit straight out and push back in straight.



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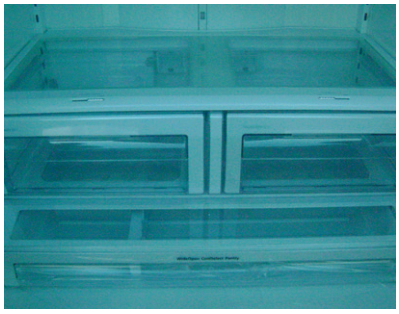
2. PRODUCT SPECIFICATIONS

2-1) Introduction of Main Function

- **A newly developed SAMSUNG bottom mount freezer in 2008 has the following characteristics.**

	Surround Multi Flow • Uniform cooling for each shelf and even in corner in fresh food compartment by centerpositioned fan and duct with multiple flow effluences.
	Twin Cooling System • The refrigerator and the freezer have two evaporators. Given this independent system, the freezer and the refrigerator are cooled individually as required and are, therefore, more efficient. Food odor from the refrigerator does not affect food in the freezer due to separate air flow circulation.
	Electronic control from outside of Pantry Cover • Adjustable temperature control ((around 41℉(5℃) : Deli / around 38℉(3℃) : Fresh / around 34℉(1℃) Chilled) Temperature control from outside of the Pantry : user friendly design helps keep foods fresh for longer
	16" Pizza Corner • Can be used for 16" pizza if the flap is turned up
	Ice and Water Dispenser • The ice and water dispenser provides ice and cold water at any time.
	Secure Auto Close Door System • Secure Auto Close Door System • Cool tight doors • Energy saving • Preventing sweat on fridge doors
	Easy Handle System • Ez-open Freezer Door • Ergonomic Door Design

▶ Changing Items

NO	Item	Details	New Model
1	Easy Handle	The freezer door is more user-friendly. So, it comes as much convenient.	
2	drawer	The dimension of the right-side drawer is 6:4 (H x W) with the shelf being raised. So, the right-side drawer can be pulled out with the left door closed.	

2-2) Specifications

ELECTRICAL SPECIFICATIONS

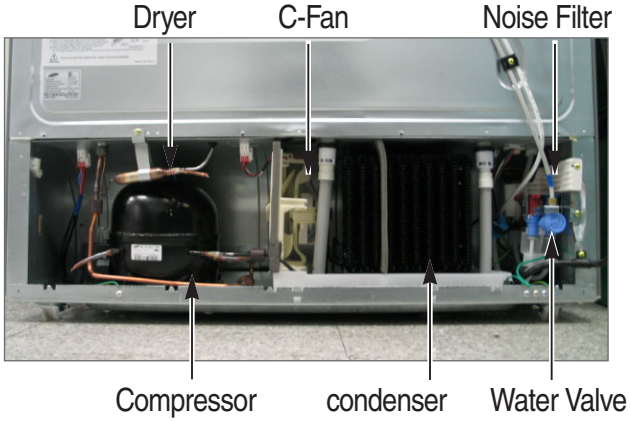
Defrost Control ..... From 24 to 32 hrs
Thermo Bimetal Protector .....140°F(60℃)(off) 104°F(40℃)(on)
Defrost Thermistor(502AT) ..... 50°F(10℃)(off)
Electrical Rating ..... AC115V 60Hz 11.6 Amps
Maximum Current Leakage ..... 0.25 mA
Maximum Ground Path Resistance ..... 0.1 Ohm
Energy Consumption 550KWh/year

NO LOAD PERFORMANCE

Ambient Temperature	70°F(21℃)	90°F(32℃)
Refrigerator,°F	34°F(1℃)~46°F(8℃)	34°F(1℃)~46°F(8℃)
Freezer,°F	-14°F(-26℃)~8°F(-13℃)	-14°F(-26℃)~8°F(-13℃)
Run Time,%	<40	<60

REFRIGERATION SYSTEM

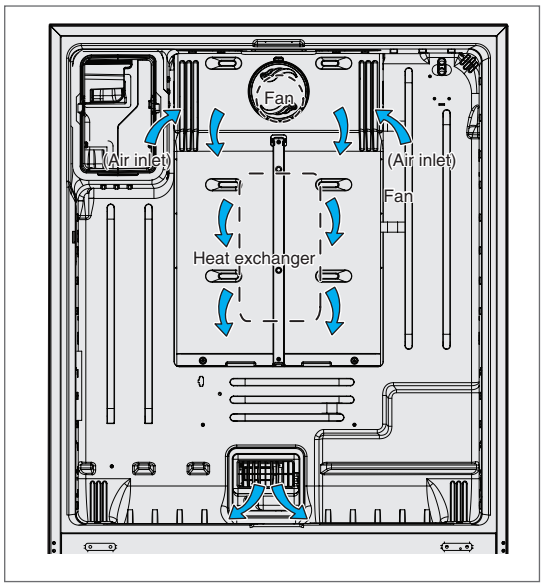
Refrigerant Charge (R134a)..... 5.64 oz(160g)
Compressor(BK190C-L2C) .....1314 Btu/hr(0.385kw)
Compressor oil ..... Freol α 15c
R Capillary tube(Dia, Length) ..... 0.032 " ,118 " (0.82mm,3000mm)
F Capillary tube(Dia, Length) ..... 0.032 " ,118 " (0.82mm,3000mm)



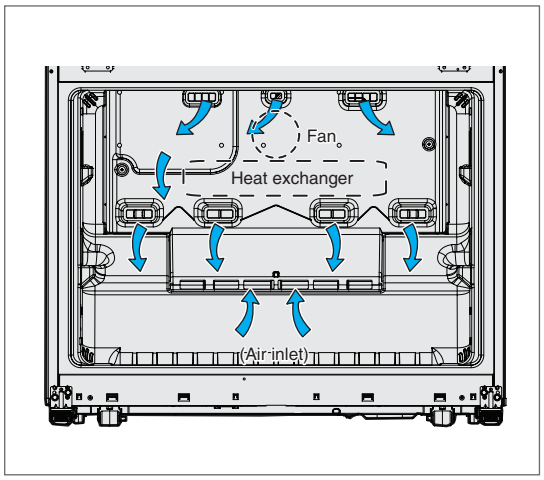
INSTALLATION

Clearance must be provided for air circulation
AT TOP ..... 1 " (25mm)
AT SIDES ..... 1 " (25mm)
AT REAR ..... 2 " (50mm)

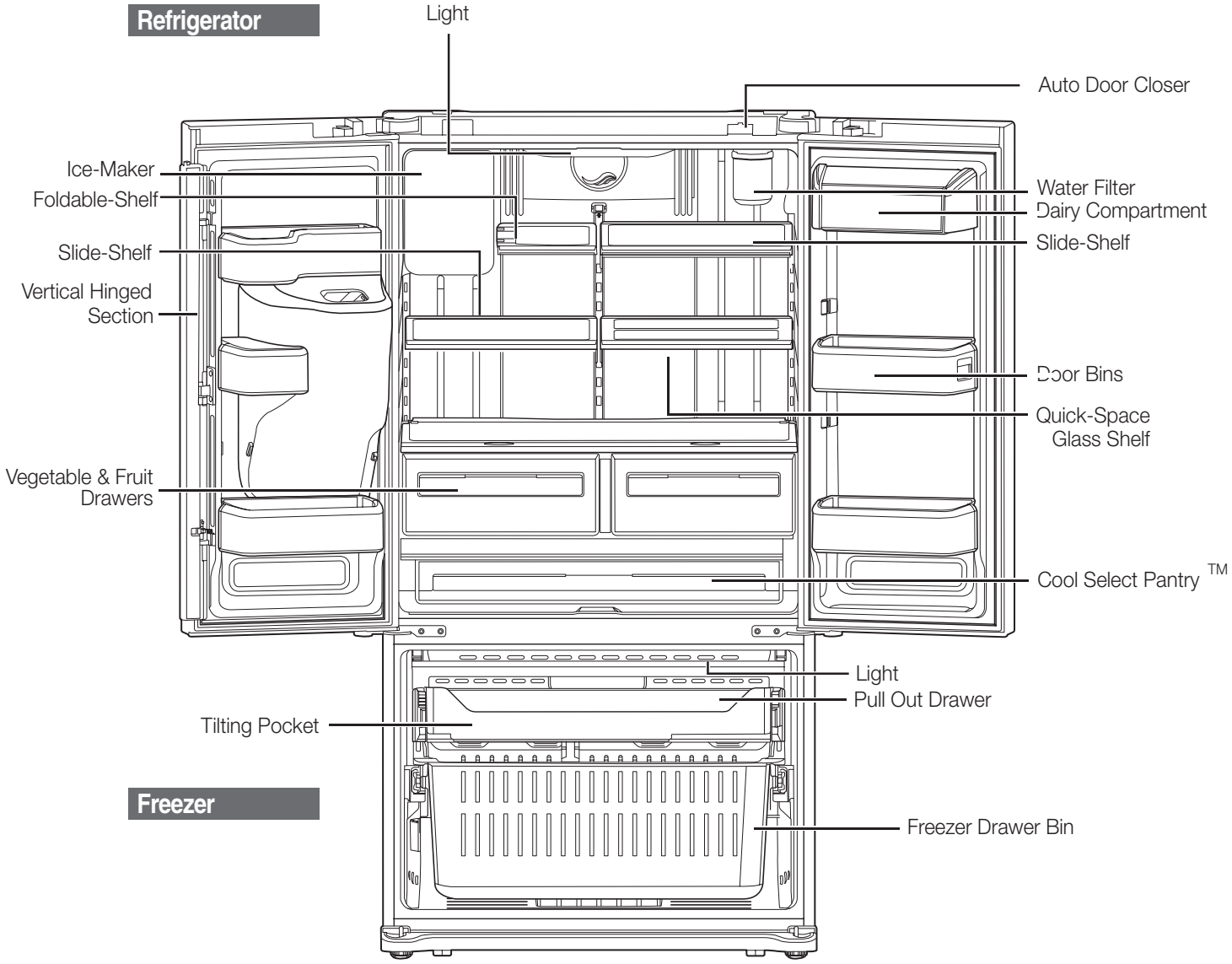
Refrigerator



Freezer



2-3) Interior Views



2-4) Model Specification

ITEM			SPEC	SAMSUNG	MAYTAG	LG
				RFG297AA	MFI2568AES	LFX25960ST
Appearance						
Product Zone			Cooling Tech	Twin Cooling	Mono Cooling	Mono Cooling
			Door Shape	Contour	Contour	Contour
			Special Room	Cool Select Pantry	Pantry	Pantry
Performance	Cooling Speed(Min)	F-Room	250 ↓	199.2	246	224
		R-Room	250 ↓	197.3	575	232
	89.6°F(32°C)	F-Room	-26.0 ↓	-28.1	-27.2	-28.8
		R-Room	2.0 ↓	0.7	1.6	-1.8
	109.4°F(43°C)	F-Room	-18.0 ↓	-21.5	-20.9	-22.5
		R-Room	5.0 ↓	1.3	5.9	0.8
	Temperature Distribution (Fridge)	F-Room	2.0 ↓	0.2	0.6	1.3
		R-Room	2.0 ↓	0.3	1.1	0.5
	Run Time	N-N	70% ↓	62.5	60.7	56.5
Noise	Sound power level		46dB ↓	41.0	47.0	41.7
	Sound Pressure level		45dB ↓	38.6	48.2	40.1

2-5) Model Specification & Specification Chart

ITEM	Model		RFG297AA
			Ice & Water Dispenser with Pantry
External size	W		35 3/4 inch (908mm)
	D	On Cabinet	29 1/8 inch (740mm)
		W/O Handle	32 7/8 inch (836mm)
		With Handle	35 3/4 inch (905mm)
	H	W/O Hinge Cap	68 3/4 inch (1744mm)
		With Hinge Cap	70 Inch (1778mm)
Net Capacity	Total		28.5 Cu.ft (807.1 ℓ)
	Freezer		19.5 Cu.ft(552.2 ℓ)
	Refrigerator		9.0 Cu.ft(254.9 ℓ)
Efficiency of Volume			55.4%
Weight	Set		328.5 Pounds (149kg)
	Packing		359.3 Pounds (163kg)
Packing	Width		38 5/8 Inch (980mm)
	Depth		39 3/8 Inch (1001mm)
	Height		75 5/8 Inch (1923mm)
Compressor			Reciprocate
Rated Frequency and Frequency			AC 115V/60Hz
Refrigerant			R 134a
Foaming Agent			C-Pentane
Refrigerant Input Amount			5.64 oz (160g)
Type Refrigerator			Indirect Cooling Method Refrigerator
Motor Rated Consumption Power			140W
Electric Heater Rated Consumption Power			380W

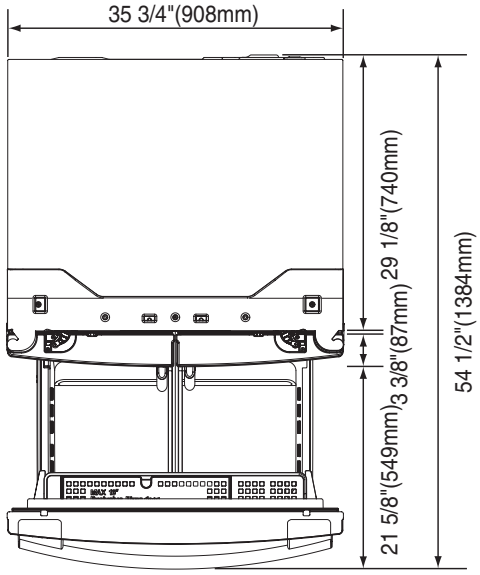
COLOR			
	Cabinet (Both Side)	Door	Molding
Black	All Black	Empire Black	I Black
Real STS	Noble STS	Versailles Stainless	Creamy STS
White	Snow White	Snow White	Snow White
Platinum STS	Noble STS	Stainless Platinum	Creamy STS

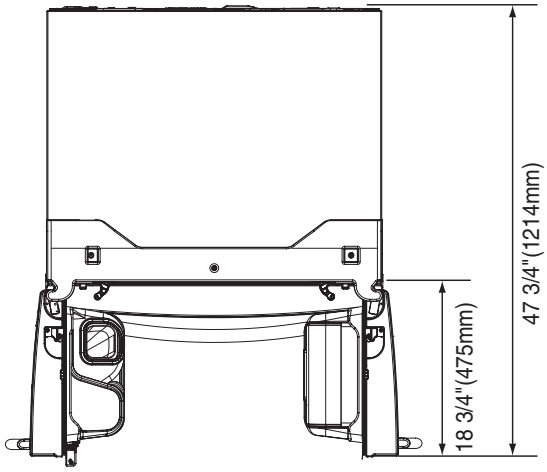
PRODUCT SPECIFICATIONS

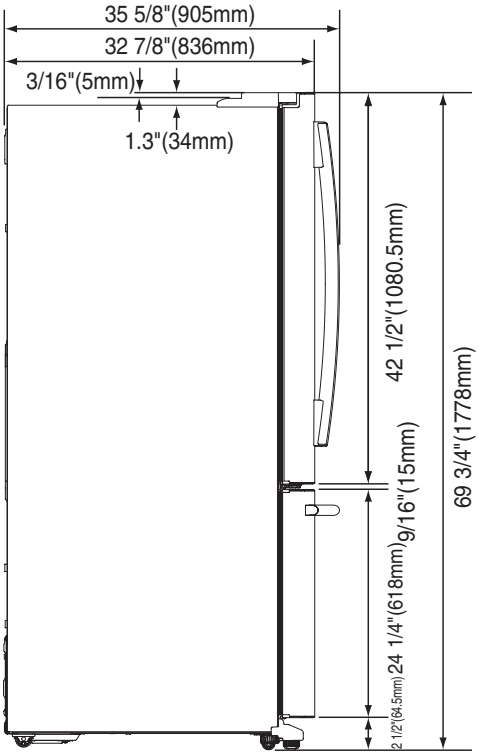
Items				Specification	
Model				RFG297AA	
Components for Freezer	Compressor		Model	BK190C-L2C	
			Starting type	BLDC	
			Oil Charge	FREOL α - 15c	
	Evaporator		Freezer	SPLIT FIN TYPE	
			Refrigerator	SPLIT FIN TYPE	
	Condenser			Forced and Natural Convection Type	
	Dryer			Molecular shieve XH-9	
	Capillary tube(Dia x Length)			R : 0.032" x 118" (0.82mm x 3000mm) / F : 0.032" x 118" (0.82mm x 3000mm)	
	Refrigerant			R134a	
Room Temperature Sensor Components	Freezer	Model	Temperature Selection	ON(℉)	OFF(℉)
		THERMISTOR (F-SENSOR) 502AT	-14℉(-26℃)	-11℉(-24℃)	-17℉(-27℃)
			-2℉(-19℃)	1℉(-17℃)	-5℉(-21℃)
			8℉(-13℃)	11℉(-12℃)	5℉(-15℃)
	Refrigerator	Model	Temperature Selection	ON(℉)	OFF(℉)
		THERMISTOR (R-SENSOR) 502AT	34℉(1℃)	36℉(2℃)	32℉(0℃)
			38℉(3℃)	40℉(4℃)	36℉(2℃)
			46℉(8℃)	48℉(9℃)	44℉(7℃)
Defrost Related Components	Defrost Cycle	First Defrost Cycle (Concurrent defrost of F and R)		6hr ±10min	
		Defrost Cycle(FRE)		12~23hr(vary according to the conditions used)	
		Defrost Cycle(REF)		6~11hr(vary according to the conditions used)	
		Pause time		12 ±1min	
	Defrost Sensor	F Defrost-Sensor	Model	THERMISTOR (502AT)	
			SPEC	5.0 KΩ at 77℉(25℃)	
		R Defrost-Sensor	Model	THERMISTOR (502AT)	
			SPEC	5.0 KΩ at 77℉(25℃)	
	Bimetal	F Bimetal-thermo Protector	Rated	AC 125V 10A	
			Operating temperature	Off : 140℉(60℃) / On : 104℉(40℃)	
		R Bimetal-thermo Protector	Rated	AC 125V 10A	
			Operating temperature	Off : 140℉(60℃) / On : 104℉(40℃)	

Items			Specification
Model			REG297AA
Electric Components	Defrost Heater(FRE)	Heated at F Defrost	AC 115V, 240W
	Defrost Heater(REF)	Heated at R Defrost	AC115V, 120W
	DISPENSER Heater	Interlock with French Heater	AC115V, 2W
	FRENCH Heater	-	AC115V, 8W
	ICE Duct Heater	Interlock with Defrost Heater (FRE)	AC115V, 4W
	Water Tank Heater	-	DC 12V, 2W
	Bimetal thermo for Preventing Overheating of Refrigerator Lamp		AC125V 6A / AC250V 3A Off: 140℉(60℃)/ On : 104℉(40℃)
	Over Load Relay	Model	4TM445PHBYY-82
		Temp.ON	257± 41℉(125± 5℃)
		Temp.OFF	156.2± 48.2℉(69± 9℃)
	Rated Voltage		AC 115V/ 60Hz
	Motor-BLDC(FRE)		DC12V / FDQT06SS3
	Motor BLDC(ICE ROOM)		DC12V / DREP5020LB
	Motor-BLDC(REF)		DC12V / FDQT06SS3
	Motor-BLDC(CIRCUIT)		DC12V / FDQT04SS2
	Motor-DAMPER(PANTRY)		DC12V / NSBY001TD1
	Lamp(FRE)		AC 120V / 60W(1EA)
	Lamp LED (REF)		DC 12V / 720mA
	Lamp LED (VEG)		DC 12V / 60mA
	Door Switch	FRE	AC 125V 1.5A (1EA)
		REF	DC200V 1.5A / MS-406-SS-01(2EA)
		REF(ICE ROOM)	125~250V /11A, EMB606
	Power Cord		AC125V 15A
	Earth Screw		BSBN (BRASS SCREW)

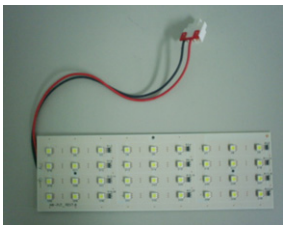
2-6)Dimensions of Refrigerator (Inches)





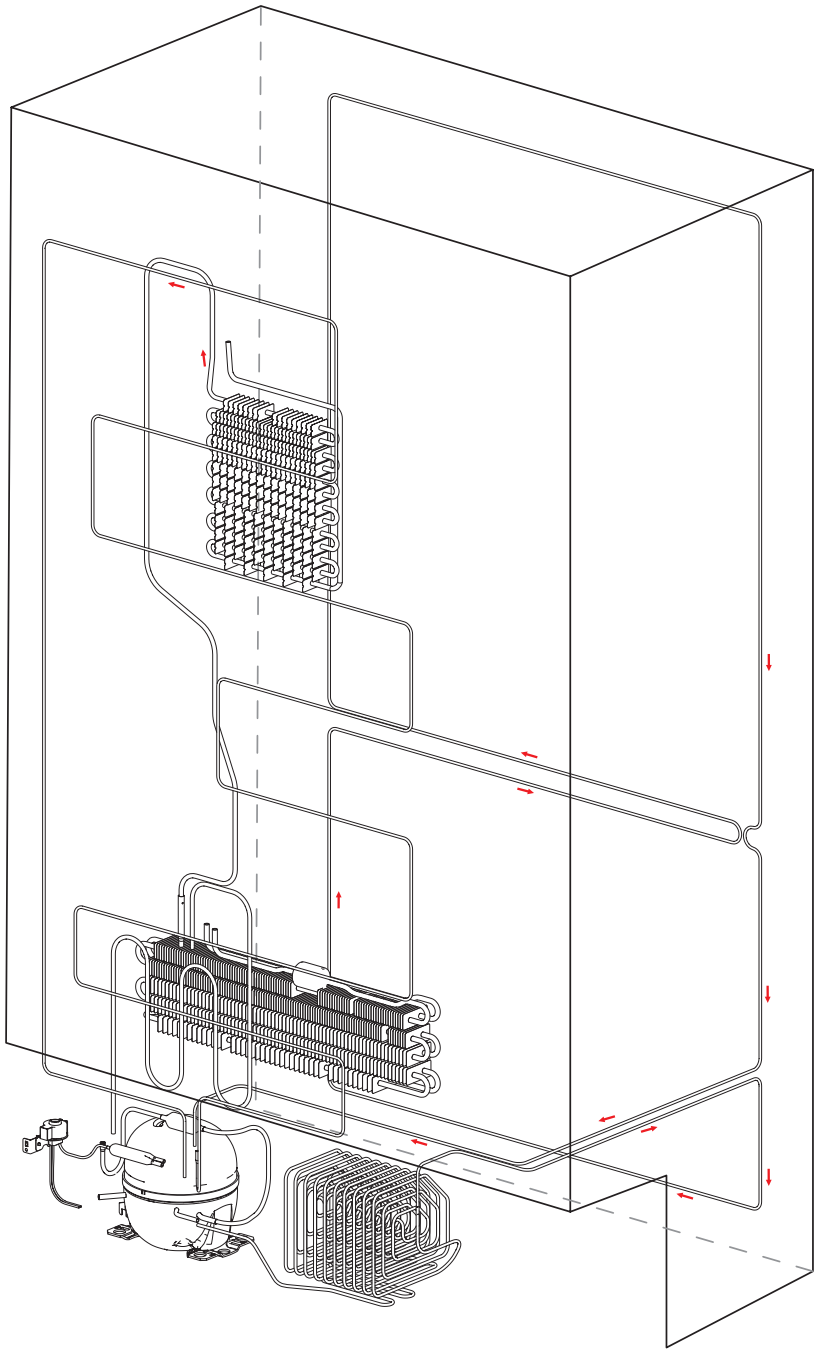


2-7) Optional Material Specification

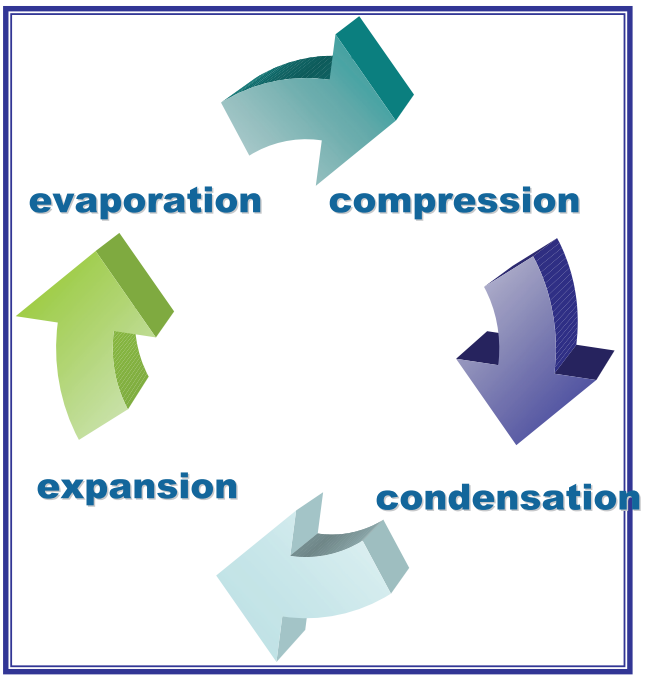
	Part Name	Part Code	AMOUNT
	FILTER WATER-ASSY	DA29-00003B	1
	ASSY-PACKING SUB	DA99-00240S	1
	INCANDESCENT LAMP	4713-001223	1
	LED LAMP	DA96-00329A	1

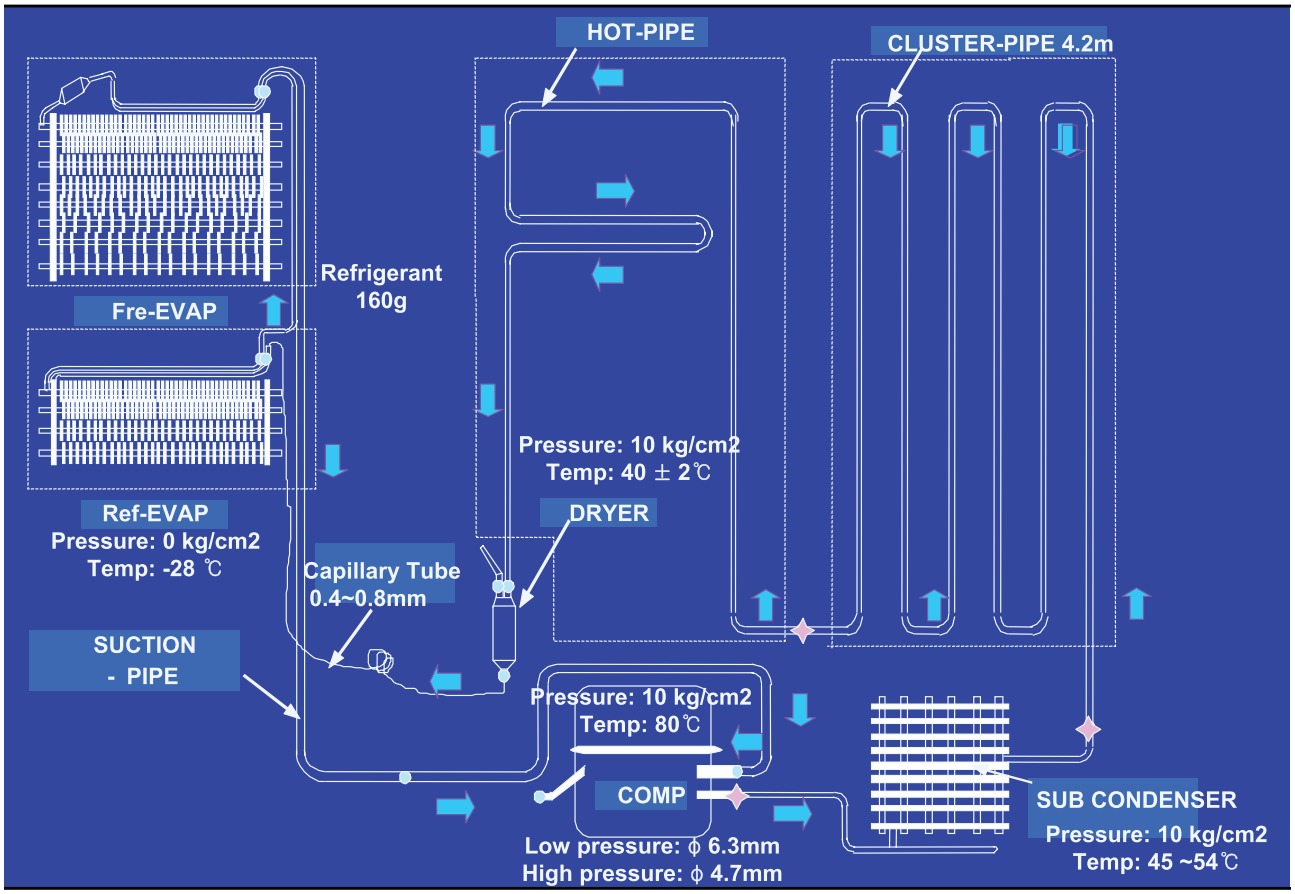
2-8) Refrigerant Route in Refrigeration cycle

1. Compressor → Sub-condenser → Hot Pipe → Back Cluster Pipe → Dryer → R Capillary Tube → Refrigerator Evaporator → Freezer Evaporator → Suction Pipe → Compressor
2. Compressor → Sub-condenser → Hot Pipe → Back Cluster Pipe → Dryer → F Capillary Tube → Freezer Evaporator → Suction Pipe → Compressor



2-8-1. PRINCIPLE OF FREEZEER





2-8-2. Operation theory of refrigeration cycle components

■ Condenser

1) Role: A device which radiates heat to the outside (water/air) to make liquid state for the high temperature / high pressure gas refrigerant discharged from compressor

2) Types

A. Air-cooling Type : Condense air by circulating naturally or manually.

1) Natural Convection Type : Used for the household refrigerator which has small condensing capacity.

2) Manual Convection Type : Circulate air manually by FAN-Motor (Large capacity)

B. Water-cooling Type : Make cooling water pass through the pipe in the condenser (Large capacity)

※ Location

① CLUSTER heat-radiating type : All Pipes effective for radiating heat are formed in the right/left, and front side of refrigerator with hard urethanes and radiate heat through the whole surfaces of cabinet to ambient air.

② Install the condenser on the outside of the product. (An old model)

③ Make them cluster at the lower part of product and radiate heat manually by fan.

☞ Radiate condensed potential heat up to liquefy completely and make change the state without changing the gas temperature itself.

※ Pipe thickness

① Low pressure: 6.3mm ② High pressure : 4.7mm ③ Capillary : About 0.4-0.8mm

※ Condenser length (Based on 300 ℓ): 26.5 M

① Assistance : 5 M ② HOT-PIPE: 6.6 M ③ CLUSTER-PIPE: 15 M

■ Capillary

1. Role: A device which makes low temperature and pressure refrigerant by reducing the pressure the normal temperature / high pressure liquid refrigerant condensed from condenser, and supply it to the evaporator.

A. To evaporate more lower temperature in case of evaporation.

B. It flows to the evaporator without back flowing to condenser, if compressor stops, and the difference of pressure between high pressure and low pressure is small so it is easy to operate the compressor again.

2. Outline

A. Thickness : About 0.4-0.8ßÆ

B. Length : It is changeable to low temperature and pressure (10->5ß∏/ß≤) depends on the 2M of thin and long copper pipe wall resistance.

2-8-3. Operation theory of refrigeration cycle components

■ Evaporator

1. Role: As the low pressure liquid refrigerant flowed from capillary absorbs heat inside of the refrigerator, it becomes low pressure gas and refrigerate the foods.
2. Theory: The low pressure refrigerant flowed to evaporator operates cooling which takes ambient evaporated potential heat with maintaining the evaporation up to evaporate completely.
3. Types of Evaporator

   A. ROLL-BOND Evaporator → Direct Cooling ONE-DOOR Type

   ☞ Rolled and adhere the 2 aluminum plate and then make refrigerant passage.

   B. PIN-PIPE Type → Indirect cooling TWO-DOOR Type

   ☞ a small aluminum plate on the aluminum pipe to increase the cooling effect.

■ Compressor

1. Role: It operates same as pump which pull out the subterranean water. It inhales the low temperature and pressure refrigerant gas (flowed out) from evaporator and make high temperature and pressure refrigerant liquid in the compressor and send it to the condenser.
2. Type of Condenser

   a. Back-and-forth motion type: A method that pistol makes back-and-forth motion through shaft and cylinder of motor rotation and compresses. ※ Used for household refrigerant

   b. Rotary Type: A method that inhales the refrigerant gas through the gap between the outside of rotor electric attached on the shaft and the inside of cylinder and compresses.

   c. Centrifugal Type
3. Please insert the explanation of inverter comp operation theory.

■ Dryer

1. Role: Absorb the moisture from the refrigerant that refrigeration cycle circulates and eliminate the foreign substance.
2. Structure: If even some moisture is included refrigerant is impossible to circulate by freezing the small capillary outlet, so silica gel or molecular sieve is (included and) sealed to absorb the internal moisture, and install a minute net to eliminate the foreign substance.

2-8-4. Operation theory of refrigeration cycle components

※.Influence of moisture

① Moisture precipitation – Blocked by ice
② Refrigerant and reaction
③ Life reduction of oil
④ Acceleration of oxidization
⑤ Copper plating phenomenon
⑥ Gas dissolution by the interaction of synthetic insulating material (insulator)

※.Influence of foreign substance

① Increase of condensed temperature.
② Increase of temperature.
③ Decrease of cooling efficiency
④ Shorten the life by friction between oil and foreign substance in the compressor.

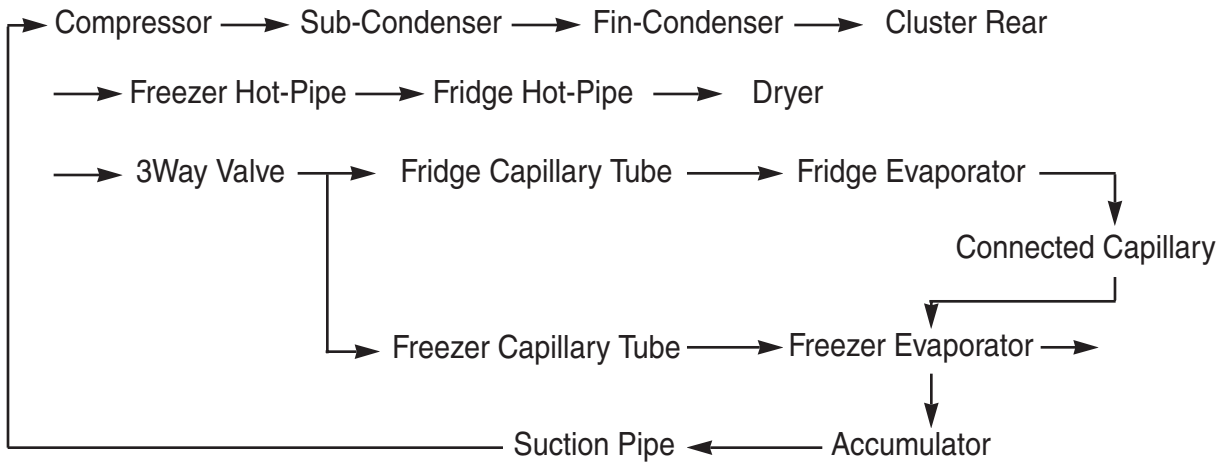
■ Accumulator

1. Role : To send a pure refrigerant gas to compressor by removing completely the refrigerant liquid from evaporator.

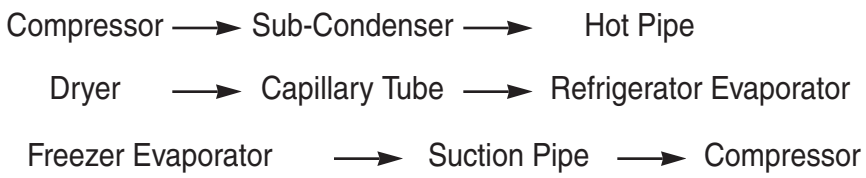
※ If a refrigerant liquid go into the compressor, overload is occurred.

2-8-5. Refrigeration Cycle Type

TDM Cycle

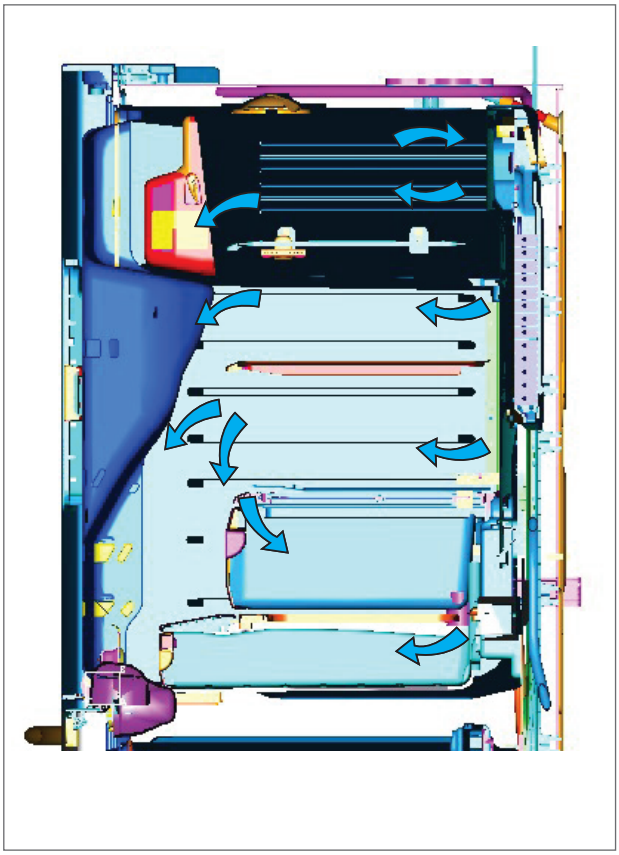


HM Cycle

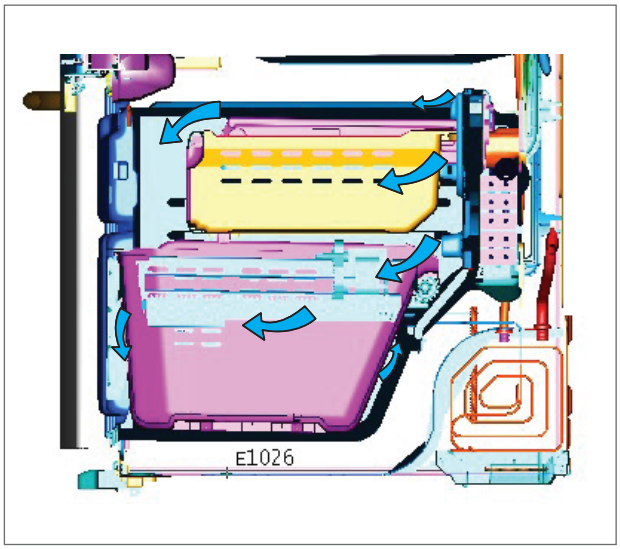


2-9) Cooling Air Circulation

Refrigerator



Freezer



3. DISASSEMBLY AND REASSEMBLY

3-1) PRECAUTION · · ·

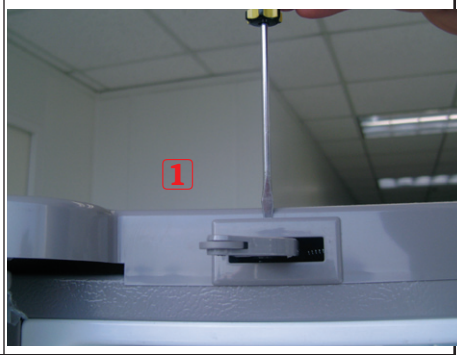
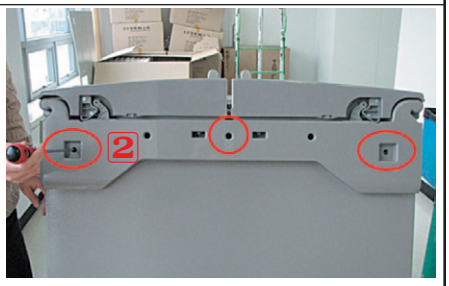
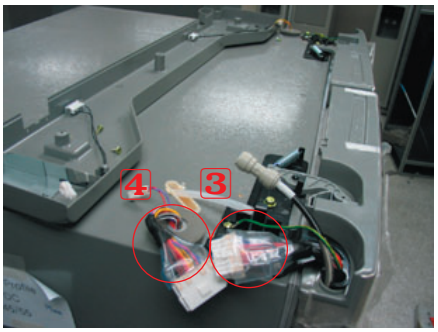
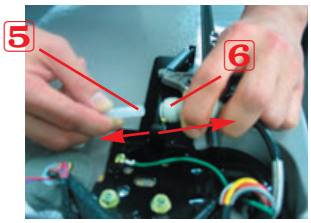
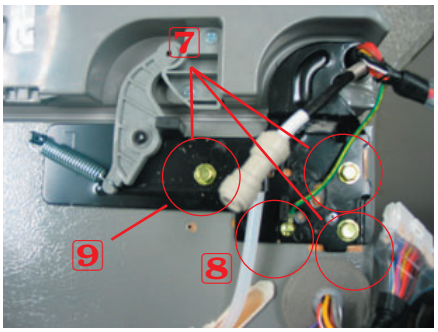
3-1) PRECAUTION

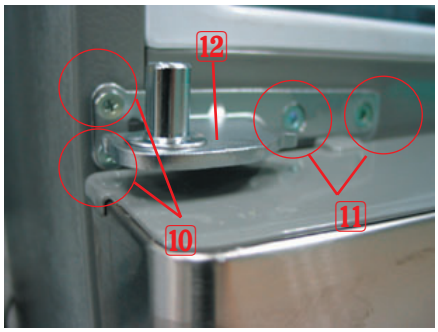
- Unplug the refrigerator before cleaning and making repairs.
- Do not dissemble or repair the refrigerator by yourself.
  - It may cause risk of causing a fire, malfunction and/or personal injury.
- Remove any foreign matter or dust from the power plug pins.
  - Otherwise there is a risk of fire.
- Do not use a cord that shows cracks or abrasion damage along its length or at either end.
- Do not plug several appliances into the same multiple power board. The refrigerator should always be plugged into its own individual electrical which has a voltage rating that matched the rating plate.
  - This provides the best performance and also prevents overloading house wiring circuits, which could cause a fire hazard from overheated wires.
- Do not install the refrigerator in a damp place or place where it may come in contact with water.
  - Deteriorated insulation of electrical parts may cause an electric shock or fire.
- The refrigerator must be grounded.
  - You must ground the refrigerator to prevent any power leakages or electric shocks caused by current leakage from the refrigerator.
- Do not put bottles or glass containers in the freezer.
  - When the contents freeze, the glass may break and cause personal injury.
- Do not store volatile or flammable substances in the refrigerator.
  - The storage of benzene, thinner, alcohol, ether, LP gas and other such products may cause explosions.

- Required Tools

IMAGE	ITEM	USE
	Phillips Head Driver	Use for assembling and disassembling of screw
	Flat Head Driver	Use for assembling and disassembling of HomeBar, Dispenser, Deli Cartessen Box, Main PBA etc...
	Hex Wrench Ø 2mm	Use for assembling and disassembling of Handle
	Socket Wrench Ø 10mm	Use for assembling and disassembling of Door Hinge

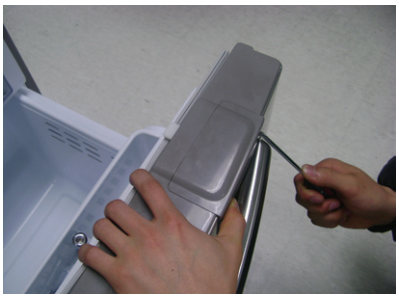
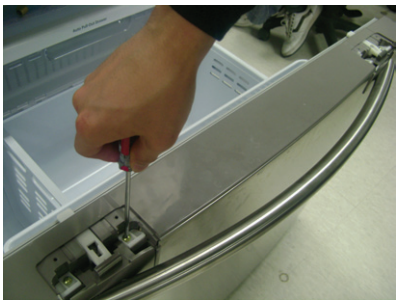
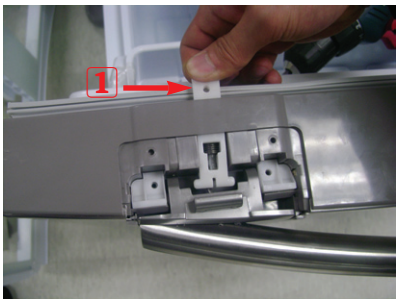
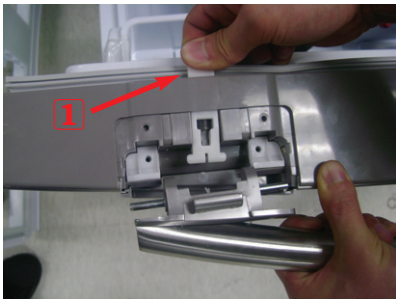
3-2) Refrigerator Door

Part Name	How To Do	Descriptive Picture
Refrigerator Door	1. With the door opened, remove the Top Table cap(1) with a Flat head screwdriver, and close the door.	
	2. Remove the 3 screws holding down the Top Table and remove the Top Table(2).	
	3. Disconnect the electrical connector(3) above the upper right door hinge and the 3 electrical connectors(4) above the upper left door hinge. Disconnect the water tube(5) by pulling the tube fitting(6) apart as shown in the picture.	 
	4. Remove the 3 hex head bolts(7) attatched to the upper left and right door hinges with a Wrench(10mm). With a Philips head screwdriver, remove the ground screw(8) attatched to the upper left and right door hinges. Remove the upper left and right door hinges(9).	

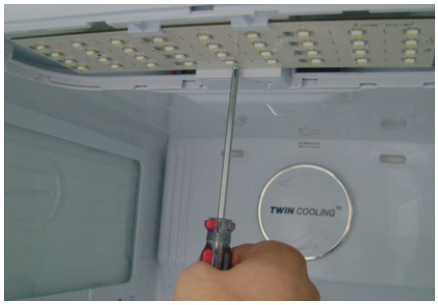
Part Name	How To Do	Descriptive Picture
Refrigerator Door	5. Lift the door straightly up to remove.	
	6. With a Philips head screwdriver, remove the two screws (10) attatched to the lower left and right door hinges. With a wrench(10mm), remove the 2 flat head screws (11) attatched to the lower left and right door hinges. Remove the lower left and right door hinges (12).	

Part Name	How To Do	Descriptive Picture
COVER VINYL	1. Using a wrench, unscrew the two screws. And disassemble the door handle.	
	2. Remove the cover vinyl of door.	

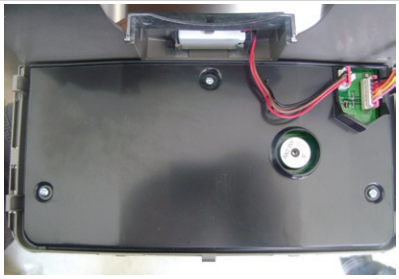
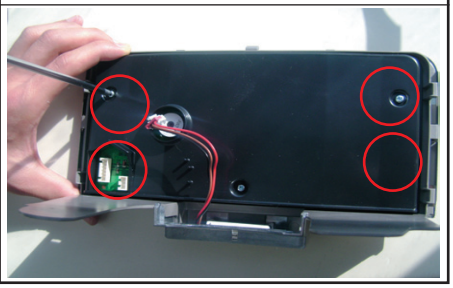
3-3) Door Handle Freezer

Part Name	How To Do	Descriptive Picture
Door Handle Freezer	1. Remove the Cap Door with a flat-blade(-) screwdriver.	
	2.Remove 4 screws	
	3. Lift up the handle to have the Slider Handle Fre(1) pushed back.	
	4. After having the Slider Handle Fre(1) pushed back, screw up at the hole.	
	5.Remove the door handle by lifting it up.	

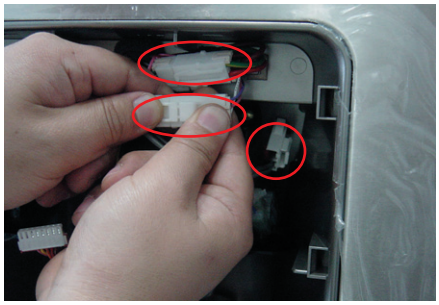
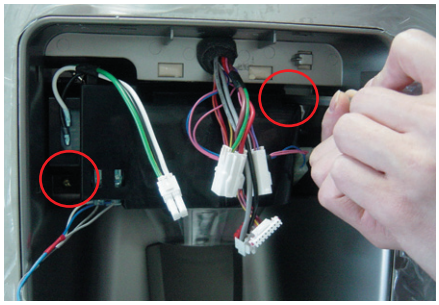
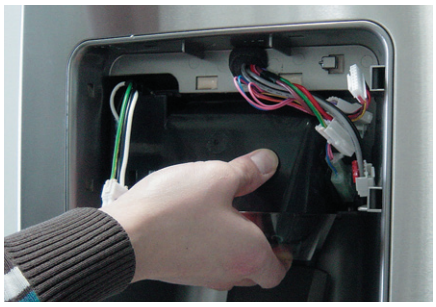
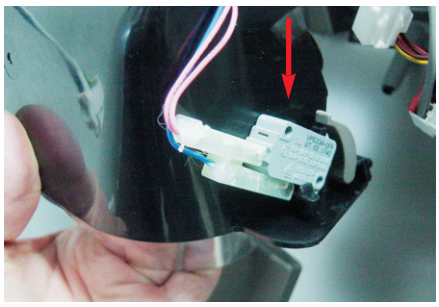
3-4) Refrigerator Light

Part Name	How To Do	Descriptive Picture
Refrigerator Light	1. Remove the lamp cover by pulling it down as pushing the rear of lamp cover.	
	2. Remove the screw. And separate the LED panel.	

3-5) Cover-Display & Water-Dispenser

Part Name	How To Do	Descriptive Picture
Cover-Display	1. Hold the Ice & Water select tab and pull it forward to take off the Display Panel. Take care not to break it.	
	2. Disengage the housing connect of display cover.	
	3. Remove 4 screws of cover-display.	

3-6) Water-Dispenser

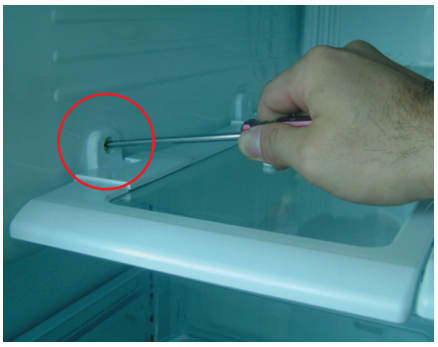
Part Name	How To Do	Descriptive Picture
Water-Dispenser	1. Disengage the 3 Housing Connectors.	
	2. Remove 2 screws of the Case Ice Route Assy.	
	3. Pull the Case Ice Route Assy.	
	4. Push the hook and remove the Micro Switch.	

Part Name	How To Do	Descriptive Picture
Water-Dispenser	1. Assembly shall be in order from the disassembly. Case-Ice and Route shall be assembled inside of hose. Otherwise, assemble cannot be accomplished.	
	2. When assembling Cover-Display, first insert it from leftside and then assemble to rightside. Otherwise, the hook can be broken.	

3-7) Glass Shelf

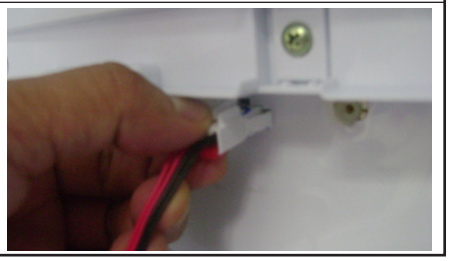
Part Name	How To Do	Descriptive Picture
Glass Shelf	Remove the shelf by lifting the front part of the shelf up and pulling it out.	

3-8) Foldable Glass Shelf

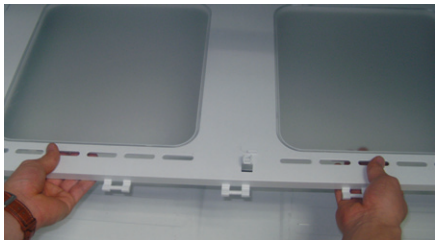
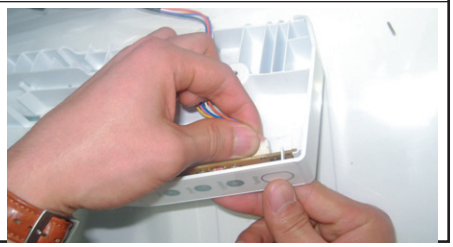
Part Name	How To Do	Descriptive Picture
Foldable Glass Shelf	Remove 2 screws of the Folderble Glass Shelf	

3-9) Vegetable & Fruit Drawers Shelf

Part Name	How To Do	Descriptive Picture
Vegetable & Fruit Drawers Shelf	1. Remove the vegetable & fruit drawer by pulling the roller part and lifting it up.	
	2. Remove the vegetable & fruit drawer shelf by pulling it out. (Refer to the picture)	

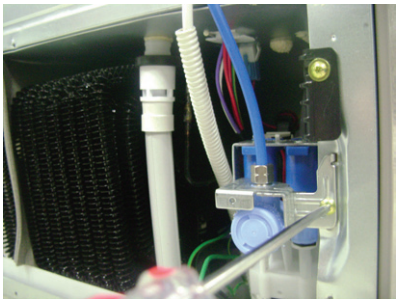
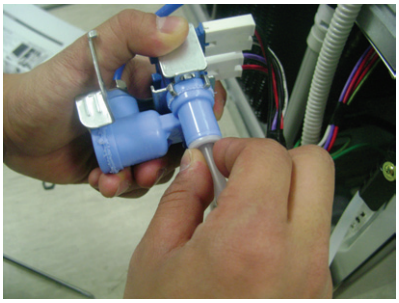
Part Name	How To Do	Descriptive Picture
Vegetable & Fruit LCD LAMP	1. Remove 1 screw	
	2. Disengage the housing connector.	

3-10) Cool Select Pantry

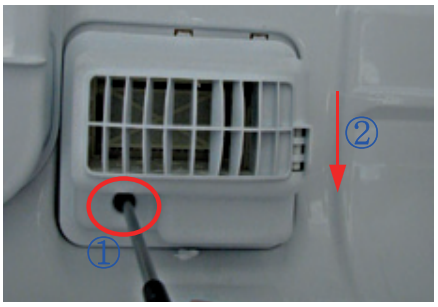
Part Name	How To Do	Descriptive Picture
Cool Select Pantry	1. Remove the cool select pantry by pulling the roller part and lifting it up.	
Cool Select Pantry Cover	1. Remove the cool select pantry cover by lifting the central part of the cover while pushing it to the left.	
Cool Select Pantry Shelf	1. Remove the cool select pantry shelf by lifting the front part of the shelf while pulling it.	
Cool Select Pantry Rail	1. Remove the cool select pantry rail by unscrewing the 3 screws and pulling the rail.	
	2. Disconnect the housing connector from the internal rail part. (Refer to the picture)	

3-11) Water Tank

Part Name	How To Do	Descriptive Picture
Water Tank	The Water Tank is located in the lower part of the fridge. Before disassembling the Water Tank take out shelves and drawers and pantry located in front of the Water Tank. 1. Remove 2 screws of the Water Tank cover.	
	2. Disengage the housing connector.	
	3. Remove the 2 screws attached to the Water Tank Heater. Remove the Water Tank heater.	
	4. Remove the 2 screws attached to the Water Tank. Remove the Water Tank cover.	

Part Name	How To Do	Descriptive Picture
Water Tank	One Water Tube is located in the machine compartment of the refrigerator. Before disassembling the Water Tube, take out the compressor cover. 5. Remove the water valve fixed by the screw.	
	6. Disconnect the water tube by pushing the tube fitting apart as shown in the picture.	
	The other Water Tube is located in the Top Table of the refrigerator. Before disassembling the Water Tube, take out the Top table. 7. Disconnect the Water Tube by pushing the tube fitting apart as shown in the picture.	
	8. Remove the Water Tank by pulling the Water Tube.	

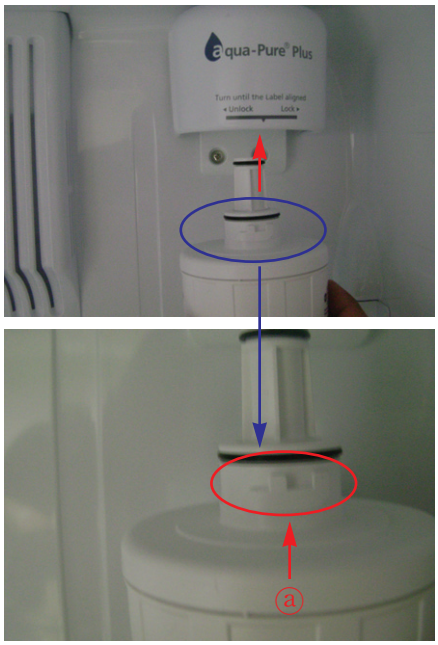
3-12) Motor Damper

Part Name	How To Do	Descriptive Picture
Motor Damper	1. Remove the cool select pantry. Remove the screw part of lower motor damper part and then push the motor damper down.	
	2. Disengage 2 housing connectors from the rear motor damper. (Refer to the picture)	

3-13) Water Filter (Disassembly)

Part Name	How To Do	Descriptive Picture
Water Filter	1. Remove the shelf by lifting the front plane of the shelf up and pulling it out. 2. Remove the water filter by turning it clockwise. (Refer to the picture)	

3-14) Water Filter (Reassembly)

Part Name	How To Do	Descriptive Picture
Water Filter	1. Place the part of (ⓐ) arrow (that is indicating in the picture) in the middle of the front filter cover and push it up.	
	2. Turn the water filter counterclockwise until central horizontal line of filter cover and both ends of water filter label are aligned. (Refer to the picture.)	

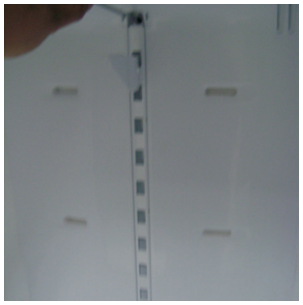
3-15) Gallon Door Bin

Part Name	How To Do	Descriptive Picture
Gallon Door Bin	1. Remove the gallon door bin by lifting it up. (Refer to the picture)	

3-16) Vertical Hinged Section

Part Name	How To Do	Descriptive Picture
Vertical Hinged Section	1. Remove 2 screw cap parts with a flat-blade(-) screwdriver. (Refer to the picture)	
	2. Unscrew 2 screws.	
	3. Disengage the internal housing connector of the vertical hinge.	
	4. Remove the vertical hinged section by lifting the vertical hinge up. (Refer to the picture)	

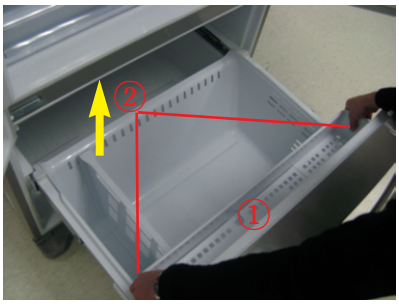
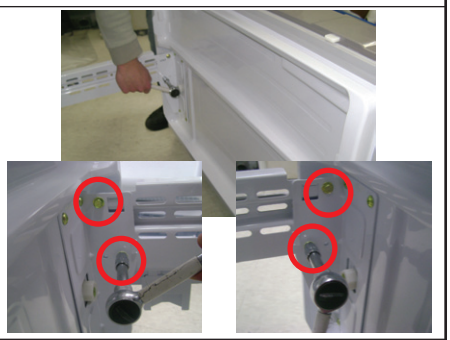
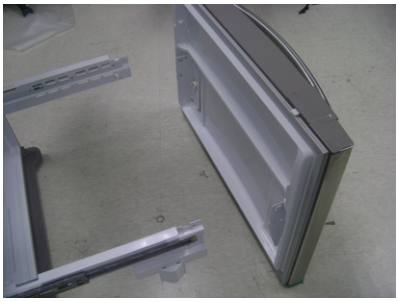
3-17) Evaporator Cover In Refrigerator

Part Name	How To Do	Descriptive Picture
Evaporator Cover In Refrigerator	1. Remove the angle cap with a flat-blade screwdriver. (Refer to the picture)	
	2. Unscrew 4 screws.	
	3. Remove the the lower part of angle mid by pulling it out and pushing it down. (Refer to the picture)	
	4. Remove the hook by pulling it from the lower part and pushing the cover down. (Refer to the picture)	
	5. Disconnect the housing connector of the rear plane. (Refer to the picture)	

3-18) Evaporator In Refrigerator

Part Name	How To Do	Descriptive Picture
Evaporator In Refrigerator	1. Remove the the housing cover by pushing both lateral sides of the housing cover and pulling it out. (Refer to the picture)	
	2. Disconnect the housing connector part. (Refer to the picture)	
	3. Unscrew 2 screws.	
	4. Remove the evaporator by lifting the bottom side of it up and pulling it out. (Refer to the picture)	

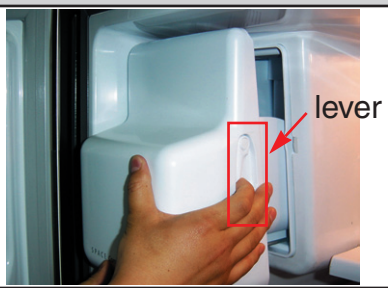
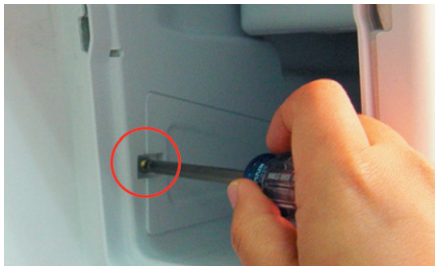
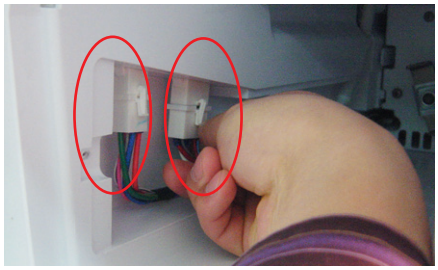
3-19) Freezer Door

Part Name	How To Do	Descriptive Picture
Freezer Door	1. Pull the drawer open to full extension.	
	2. Remove the tilting Pocket(①) by pulling the both brackets(②) upward at the same time.	
	3. Take out the lower basket(③) by lifting the basket up from rail system.	
	4. Unscrew 4 bolts. (2 bolts each on the both sides)	
	5. Lifting up the freezer door, remove the freezer door from the rail.	

3-20) Pull Out Drawer

Part Name	How To Do	Descriptive Picture
Door Handle Freezer	1. Slide the drawer in as much as possible.	
	2. Lift the drawer up.	
	3. Remove the pull out drawer by lifting the bottom part of drawer bin and pulling it out.	

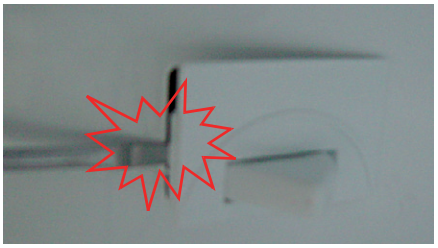
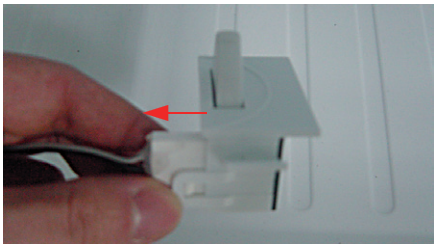
3-21) Ice-Maker

Part Name	How To Do	Descriptive Picture
Ice Maker	1. Pull the lever forward and take out the ice bucket.	
	2. Remove 1 screw of the Cover.	
	3. Disassemble the cover with a flat-blade(-) screwdriver and pull it out.	
	4. Disengage the 2 housing connectors.	
	5. Push the hook and pull the Ice-Maker out.	
	6. To disassemble, push the tab and pull the Case-Auger and the motor out.	

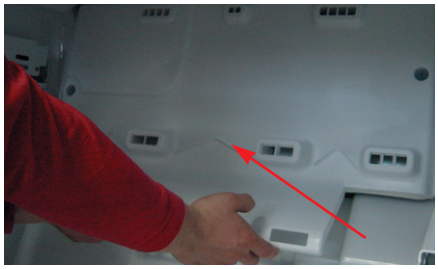
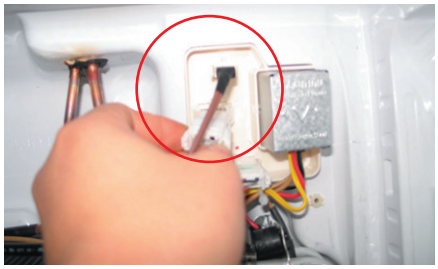
3-22) Freezer Light

Part Name	How To Do	Descriptive Picture
Freezer Light	1. Remove the light by pulling the light cover down while pushing the rear plane of light cover.	

3-23) Door Switch In Freezer

Part Name	How To Do	Descriptive Picture
Door Switch In Freezer	1. Remove the freezer drawer bin by using a flat-blade(-) screwdriver.(Refer to the picture)	
	2. Disconnect the housing connector part.	

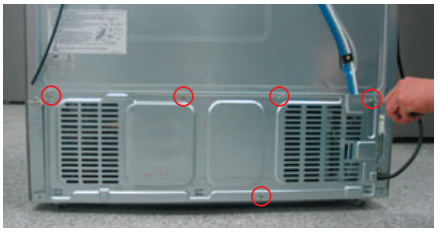
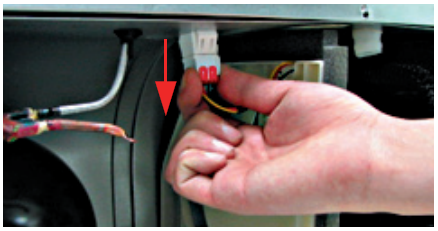
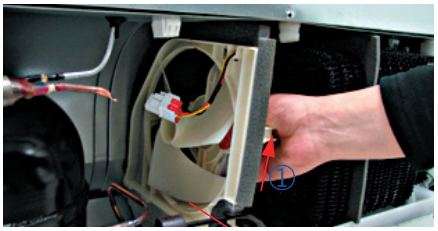
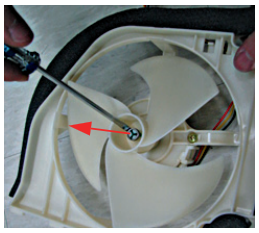
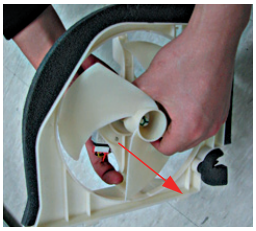
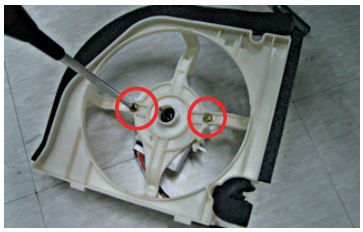
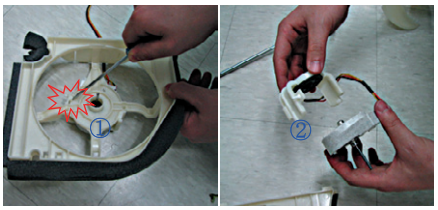
3-24) Evaporator Cover In Freezer

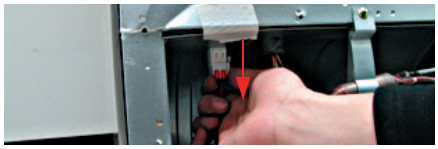
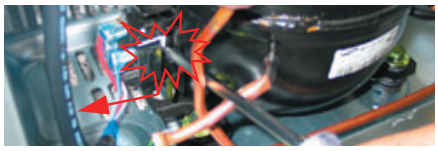
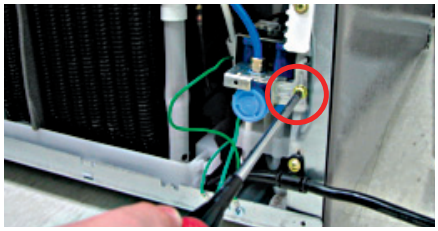
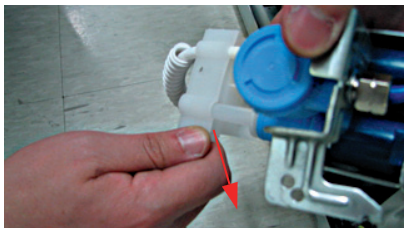
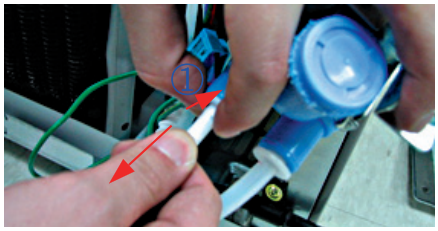
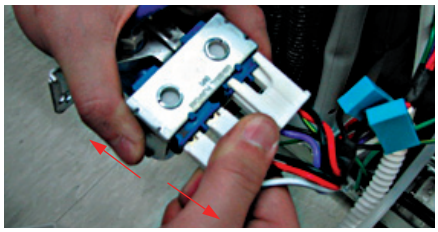
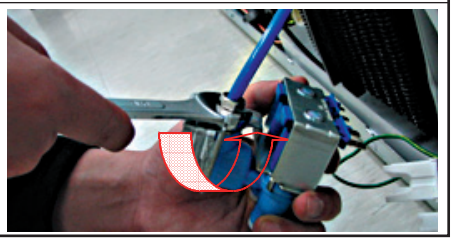
Part Name	How To Do	Descriptive Picture
Evaporator Cover In Freezer	1. Remove the freezer door and freezer drawer by pulling out the drawer and then unscrewing 2 screws.	
	2. Lift up the evaporator cover.	
	3. Disengage the 3 housing connectors and remove the evaporator cover.	

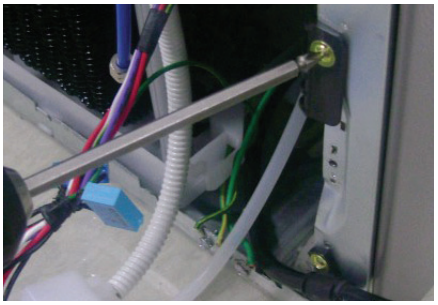
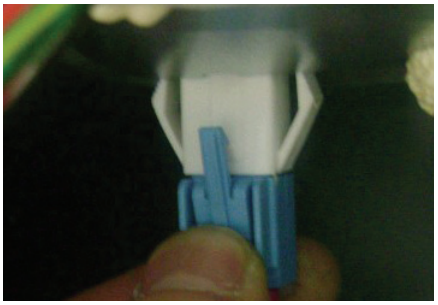
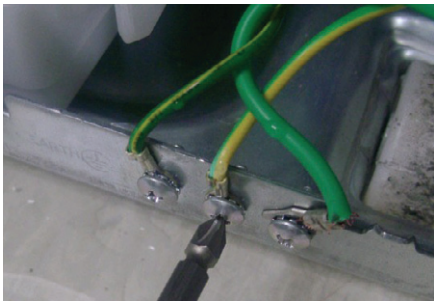
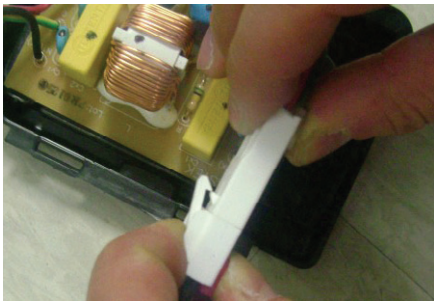
3-25) Evaporator In Freezer

Part Name	How To Do	Descriptive Picture
Evaporator In Freezer	1. Remove the housing cover by pushing both lateral sides of housing cover part and pulling it out. Remove the housing connector part.	
	2. Remove the evaporator by pulling the lower part of the evaporator while lifting it up.	

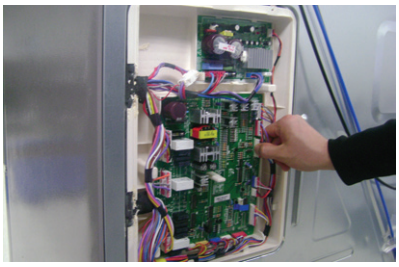
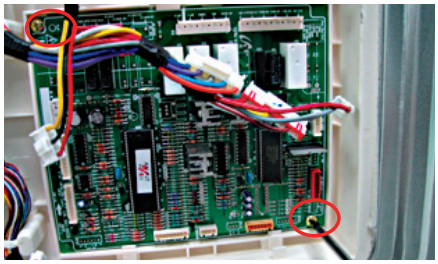
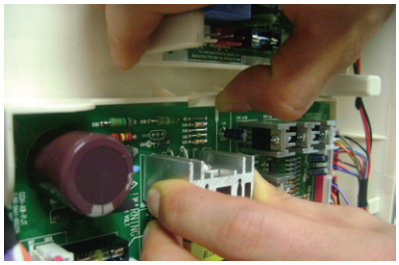
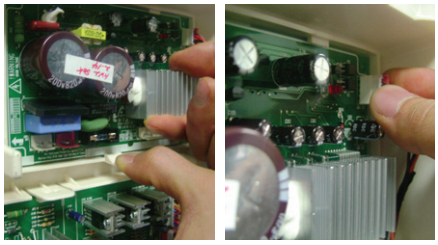
3-26) Machine Compartment

Part Name	How To Do	Descriptive Picture
Motor Fan	1. Unscrew 5 screws of cover compressor.	
	2. Disengage the housing connector. (Refer to the picture)	
	3. Remove the hooker of support circuit motor by lifting the hooker up and pulling it out.	
	4. Remove the screw with a flat-blade screwdriver. (Refer to the picture)	
	5. Remove the motor fan by pulling the fan out while graping the motor part. (Refer to the picture)	
	6. Unscrew 2 screws fixed in the motor.	
	7. Remove the hook of the motor cover with a flat-blade (-) screwdriver and then remove the motor.	

Part Name	How To Do	Descriptive Picture
Relay O/L	1. Disengage the housing connector.	
	2.Remove Cover Relay.	
	3. Remove the relay O/L with a flat-blade screwdriver. (Refer to the picture)	
Water Valve	1. Unscrew the screw which is fixing the Water Valve.	
	2. Remove the hook part of the hose by pushing it down.	
	3. Remove 2 water hose parts while pushing the upper part of ①. (Refer to the picture)	
	4. Disengage 2 housing connectors.	
	5. Remove the hose connected by the nut with a wrench(8mm).	

Part Name	How To Do	Descriptive Picture
Power Cord & Noise Filter	1. Unscrew 2 screws.	
	2. Disengage the housing connector.	
	3. Unscrew 3 earth screws.	
	4. Remove the cover by pushing the hook up using a flat-blade(-) screwdriver. (Refer to the picture)	
	5. Disengage the housing connector to separate the power cord and noise filter.	

3-27) Electric Box

Part Name	How To Do	Descriptive Picture
PBA Main	1. Pull the refrigerator forward to have enough space to work at the rear side of the appliance.	
	2. Unscrew 2 screws of the PCB cover.	
	3. Disengage all housing connectors from the main PCB.	
	4. Unscrew 2 PCB fixing screws.	
	5. Remove the main PCB by lifting the upper part of the hook up. (Refer to the picture)	
PBA SMPS	1. Remove the cover PCB and then disengage the housing connector connected with main PCB. Remove the SMPS PCB by pushing the lower part of the hook down.	

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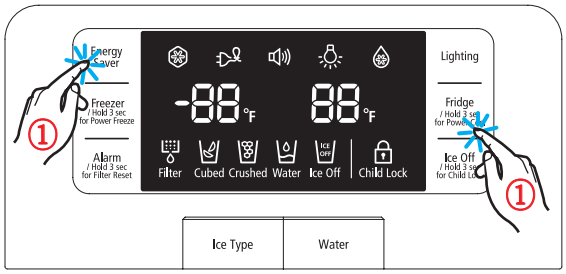
4-1) Function for failure diagnosis

4-1-1. Test mode (manual operation / manual defrost function)

- If Energy Saver Key + Fridge Key on the front of panel are pressed simultaneously for 8 seconds , it will be changed to the test mode and all displays on the front of panel will be off.
- If any key on the front of panel is pressed within 15 seconds after the test mode, it will be operated as below sequence :
  manual operation(Freezer compartment) → manual defrost of fresh food and freezer compartments (Fd) → Cancel(Display all off).
- If any key on the front of panel is not pressed within 15 seconds after the test mode, the test mode will be canceled and it will be returned to previous mode.

1) Manual operation function



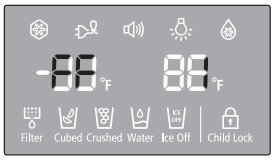
① If Energy Saver Key + Fridge Key are pressed simultaneously for 8 seconds, (displays are all off)
It will be changed to the test mode (manual operation) by pressing any key

1-1) If any key is pressed once in test mode, blinks "FF-1" on the display and it indicates the refrigerator has entered the manual operation. At this moment, buzzer beeps as an alarm.

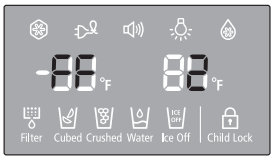
1-2) If any key is pressed once at the manual operation1 status, FF-2 will be displayed.
And if any key is pressed one more time, FF-3 will be displayed. FF-2 and FF-3 means manual operation2 and 3 separately. These 3 functions operate with different RPM of COMP.

1-3) If manual operation is selected, compressor will run at once without 5 minutes delay in any mode. If the refrigerator is on the defrost cycle at the moment, defrost will be finished and manual operation will begin.
(Be careful if manual operation get started at the moment of compressor off, over load could be occurred)

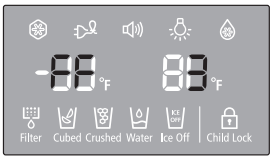
Compulsion working 1 : 3600RPM



Compulsion working 2 : 2450RPM



Compulsion working 3 : 2050RPM



1-4) If manual operation works, compressor & f-fan operate continuously for 24 hours and fresh food compartment will be controlled by the setting temperature.

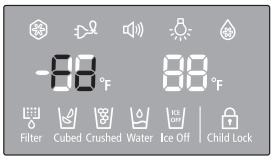
1-5) When the manual operation runs, setting temperature will be selected automatically as below: freezer compartment -14℉(-25℃), fresh food compartment 34℉(1℃).

1-6) During manual operation, Power Freeze & Power Cool function will not be worked.
If a function is selected, the power function icon of the selected function will be off automatically after 10 seconds.

1-7) Manual operation can be canceled by turning on the appliance after power off(reset) or choosing the step 4) test cancel mode.

1-8) Alarm(0.25 sec ON/ 0.75 sec OFF) will beep continuously until manual operation is completed and there is no function to make the sound stop.

2) Simultaneous manual defrost(fresh food and freezer compartments) function



2-1) If any key is pressed one more time during manual operation(fresh food compartment), "Fd" shows in the display and then manual operation will be canceled at once and fresh food compartment will be defrosted.

2-2) At this moment, alarm beeps for 3 seconds (0.1 sec ON/ 1 sec OFF) during manual defrost function of fresh food and freezer compartment.

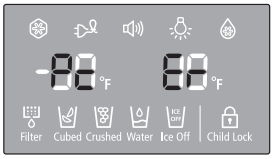
3) Test cancel mode

3-1) During the simultaneous defrosting of fresh food and freezer compartments simultaneously, if the display panel change to the test mode and test button is pressed one more time, defrosting of fresh food and freezer compartments will be canceled at the same time and will return to the normal operation.
Or, all test functions will be canceled by turning main power ON and OFF.

4-1-2. Display function of Communication error

1) Display function when Panel ↔ MAIN MICOM communication has error

1-1) If there is no answer for 10 seconds after the panel micom received the requirement of communication, "Pc - Er" display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)



1-2) “Pc - Er” display on the Pantry Room Display will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)

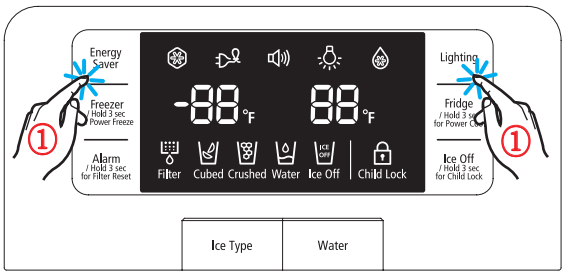
2) Display function when Panel ↔ MAIN MICOM OPTION has error

2-1) ”OP - Er” code is repeatedly ON/OFF until Option error settles down.

4-1-3. Self-diagnostic function

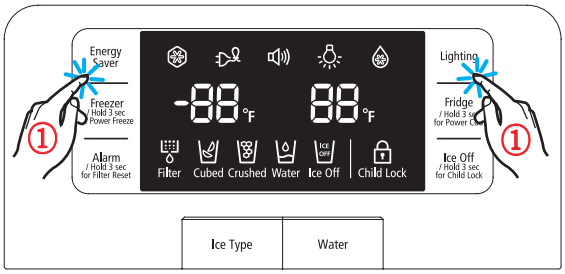
1) Self-diagnostic function in the Initial power ON

1-1) Micom operates self-diagnostic function to check the temperature sensor condition within 1 second when the refrigerator turned On initially.
1-2) If bad sensor is detected by the self-diagnostic function, the applicable display LED will blink for 0.5 sec.
At this moment, there is no beep sound.(Refer to self-diagnostic CHECK LIST)
1-3) Self-diagnostic button is recognized only when the error is displayed by the bad sensor. Display does not operate normally but temperature control will be controlled by the emergency operation.
1-4) When the error is detected by self-diagnosis, the error can be canceled automatically if all troubled sensors are corrected or Self-diagnostic function key (Energy Saver Key + Lighting Key) are pressed simultaneously for 8 seconds.
(Return to normal display mode)



① If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds, the error mode by self-diagnosis will be canceled.

2) Self-diagnostic function during normal operation

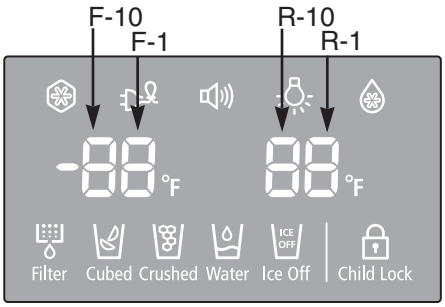


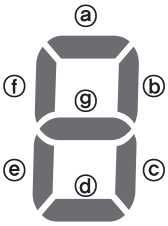
① If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds, the error mode by self-diagnosis will be canceled.

2-1) If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds during normal operation, the temperature setting display will operate for 2 seconds (ON/OFF 0.5sec each).
If Energy Saver Key + Lighting Key are pressed simultaneously for 8 seconds (including above 2 seconds), self-diagnostic function will be selected.
2-2) At this moment, self-diagnostic function will be returned with buzzer sound 'ding-dong'.
If there is an error, display of error will be operated for 30 seconds and then return to normal condition whether problem is corrected or not.
(Refer to self-diagnosis CHECK LIST)
2-3) Input by button is not accepted during self-diagnostic function.

∗ Self-diagnosis CHECK LIST

NO	Trouble item	Display LED	Trouble contents
1	Ice Maker Sensor Error	R-1-ⓐ	Sensor system in ICE MAKER errors
2	R-Sensor Error	R-1-ⓑ	Sensor system in FF compartment errors
3	R-DEF-Sensor Error	R-1-ⓒ	Defrost Sensor system in FF compartment errors
4	R-FAN Error	R-1-ⓓ	Fan motor system in FF compartment errors
5	Ice Maker Error	R-1-ⓔ	ICE MAKER operation system errors
6	R-DEF, Heater Error	R-1-ⓖ	Defrost system in FF compartment errors
7	Ambient-Sensor Error	F-1-ⓐ	Snesor external system errors
8	F-Sensor Error	F-1-ⓑ	Sensor system in FZ compartment error
9	F-DEF-Sensor Error	F-1-ⓒ	Defrost Sensor system in FZ compartment errors
10	F-FAN Error	F-1-ⓓ	Fan motor system in FZ compartment errors
11	C-FAN Error	F-1-ⓔ	Fan motor system in machinery room errors
12	Ice Room-Sensor Error	F-1-ⓕ	Sensor system in ICE ROOM errors
13	F-DEF.-Heater Error	F-1-ⓖ	Defrost system in FZ compartment errors
14	Ice Room FAN Error	F-10-ⓑ	Fan motor system in ICE ROOM errors
15	Pantry-Damper-Heater Error	R-10-ⓐ	Damper Heater open/wire connection errors
16	Pantry-Sensor Error	R-10-ⓑ	Sensor system in Pantry Room errors
17	Panel↔Main Micom Error	F-10-ⓖ	Communication between Panel MAIN MICOM error
18	Water Tank-Heaer Error	R-10-ⓖ	Water Tank Heater open/wire connection errors

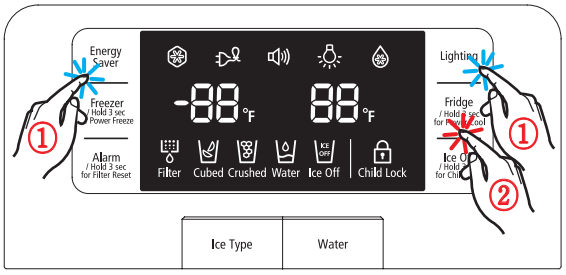




∗ Self-diagnostics check list

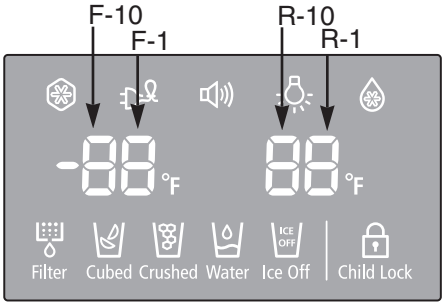
LED	Item	Trouble contents	Diagnostic method
R-1-ⓐ	Ice Maker Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit Display error of detecting temperature of sensor: more than 149°F (+65°C) or less than -58°F(-50°C)	The voltage of MAIN PCB CN90 #3↔CN90#4 : shall be between 4.5V~1.0V.
R-1-ⓑ	R-Sensor Error		The voltage of MAIN PCB CN30#6↔ CN76#1:shall be between 4.5V~1.0V
R-1-ⓒ	R-DEF-Sensor Error		The voltage of MAIN PCB CN30#8↔ CN76#1:shall be between 4.5V~1.0V
R-1-ⓓ	R-FAN Error	Display error during operation of applicable fan motor : Feed Back signal line contact error, separation of motor wire, motor error	Voltage of MAIN PCB CN76-4 Orange ↔1 Gray shall be between 7V~12V
R-1-ⓔ	Ice Maker Error	Display error : ice making kit is harvested more than 3 times and level error ** Apply to the applicable Ice Maker model.	After replacing ice maker, check the operation by turning the appliance ON again.
R-1-ⓖ	R-DEF. Error	Display error : separation of fresh food compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though fresh food compartment defrost is heating continuously for more than 80 minutes.	After separating MAIN PCB CN70,CN71 from PCB, the resistance value between CN70 White ↔ CN71 Orange shall be 110(441) ohm ± 7%. (Resistant value is varied by the input power) 0 Ohm : heater short, ∞ Ohm : wire / bimetal Open.
F-1-ⓐ	Ambient-Sensor Error	Display error : sensor housing separation, contact error, disconnection, short circuit Display error by detecting temperature of sensor: more than 149°F(+65°C) or less than -58°F(-50°C)	The voltage of MAIN PCB CN31#1↔#4 : shall be between 4.5V~1.0V.
F-1-ⓑ	F-Sensor Error		The voltage of MAIN PCB CN30#3↔ CN76#1:shall be between 4.5V~1.0V
F-1-ⓒ	F-DEF-Sensor Error		The voltage of MAIN PCB CN30#4↔CN76#1:shall be between 4.5V~1.0V
F-1-ⓓ	F-FAN Error	Display error during operation of applicable fan motor : Feed Back signal line contact error, motor wire separation, motor error	Voltage of MAIN PCB CN76-3 Yellow ↔ 1 Gray shall be between 7V~12V.
F-1-ⓔ	C-FAN Error	Display error during operation of applicable fan motor : Feed Back signal line contact error, motor wire separation, motor error	Voltage of MAIN PCB CN76-5 Sky-blue ↔ 1 Gray shall be between 7V~12V.
F-1-ⓕ	Ice Room Sensor Error	Display error : sensor housing separation,contact error, disconnection, short circuit. Display error by detecting temperature of sensor: more than 149°F (+65°C) or less than -58°F (-50°C)	The voltage of MAIN PCB CN31#3↔CN76#1:shall be between 4.5V~1.0V
F-1-ⓖ	F-DEF. Error	Display error : separation of freezer compartment defrost heater housing part , contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though fresh food compartment defrost is heating continuously for more than 70 minutes.	After separating MAIN PCB CN70,CN71 from PCB, resistant value between CN70 brown ↔ CN71 Orange shall be 55(220) ohm ± 7%. (Resistant value is varied by input power) 0 Ohm : heater short, ∞ Ohm : wire / bimetal Open.
F-10-ⓑ	Ice Room-FAN Error	Display error during operation of applicable fan motor : Feed Back signal line contact error, motor wire separation, motor error	Voltage of MAIN PCB CN76-2 Black ↔ CN76-1 Gray : shall be between 6V~12V.
R-10-ⓐ	Pantry-Damper-Heater Error	Display error when open error is detected by damper heater : separation of Damper Heater housing part, contact error, disconnection, short circuit	After separating MAIN PCB CN91from PCB, the resistant value between Black ↔ brown wire shall be 145 ohm ± 7%. 0 Ohm : heater short, ∞ Ohm : wire / bimetal Open.
R-10-ⓑ	Pantry-Sensor Error	Display error : separation of sensor housing, contact error, disconnection, short circuit. Display error by detecting temperature of sensor: more than 149°F (+65°C) or less than -58°F(-50°C)	The voltage of MAIN PCB CN30#9 ↔ CN76#1 : shall be between 4.5V~1.0V.
R-10-ⓖ	Water Tank-Heater Error	Display error when open error is detected by Water Tank Heater : separation of Water Tank Heater housing part,contact error, disconnection, short circuit	After separating MAIN PCB CN79 from PCB, the resistant value between White ↔ Pink wire shall be 72 ohm 7%. 0 Ohm : heater short, ∞Ohm : wire / bimetal Open.
F-10-ⓖ	Panel↔Main communication Error	Display "Pc - Er" in the panel with alarm : MICOM MAIN PANEL communication error oP-Er is displayed when the Option is not equivalent with the right value.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCB With the oscilloscope after a cable problem confirming.

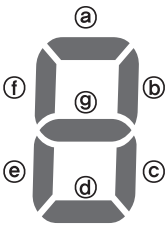
4-1-4. Display function of Load condition



① If Energy Saver Key + Lighting key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 2 seconds.
② If take the finger off from above keys and press Fridge, load condition mode will be started.

1) If Power Energy Saver Key + Lighting key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display of fresh food and freezer compartments will blink ALL ON/OFF with 0.5 for 2 seconds.
2) At this moment, If Fridge Key after Energy Saver Key + Lighting Key is pressed, load condition display mode will be returned with alarm.
3) Load condition display mode shows the load that micom signal is outputting.
However, It means that micom signal is outputting, it does not mean whether load is operating or not.
That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)
4) Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.
5) Load condition display is as below.

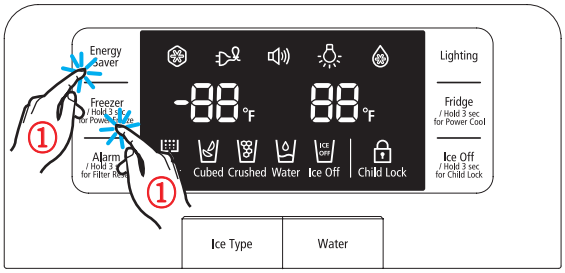




∗ Load mode Check list

Display LED	Display contents	Operation contents
R-1-ⓐ	R-FAN High	When FF compartment FAN operates with high speed, applicable LED ON
R-1-ⓑ	R-FAN Low	When FF compartment FAN operates with low speed, applicable LED ON
R-1-ⓒ	R-DEF Heater	When FF compartment defrost heater operates, LED ON
R-1-ⓓ	Start Mode	When refrigerator is plugged initially, LED ON
R-1-ⓔ	Overload condition	When ambient temperature is more than 93℉(34℃), LED ON
R-1-ⓕ	Low temperature condition	When ambient temperature is less than 72℉(22℃), LED ON
F-1-ⓔ,ⓕ ALL LED Off	Normal Condition	When ambient temperature is between 73℉(23℃) and 91℉(33℃)
R1-ⓖ	Exhibition Mode	LED ON at the display mode.
F-1-ⓐ	COMP.	When COMP operates, applicable LED ON.
F-1-ⓑ	F-FAN High	When FZ compartment FAN operates with high speed, applicable LED ON.
F-1-ⓒ	F-FAN Low	When FZ compartment FAN operates with low speed, applicable LED ON.
F-1-ⓓ	F-DEF Heater	When FZ compartment defrost heater operates, LED ON
F-1-ⓔ	C-FAN High	When compressor FAN operates with high speed, applicable LED ON.
F-1-ⓕ	C-FAN Low	When compressor FAN operates with low speed, applicable LED ON.
F-10-ⓖ	French Heater	When French heater operates, applicable LED ON
F-1-ⓖ	Dispenser Heater	When Dispenser Heater operates, applicable LED ON.
F-10-ⓐ	Water Tank Heater	When Water Tank Heater operates, applicable LED ON.
F-10-ⓑ	F-valve	When the F-valve operates LED ON
F-10-ⓓ	Ice Room-FAN High	When Ice Room-FAN operates with high speed, applicable LED ON.
F-10-ⓔ	Ice Room-FAN Low	When Ice Room-FAN operates with low speed, applicable LED ON.
R-10-ⓐ	Pantry room Damper Open	When damper open, applicable LED ON
R-10-ⓑ	R-valve	When the R-valve operates LED ON

4-1-5. Cooling Off mode setting function



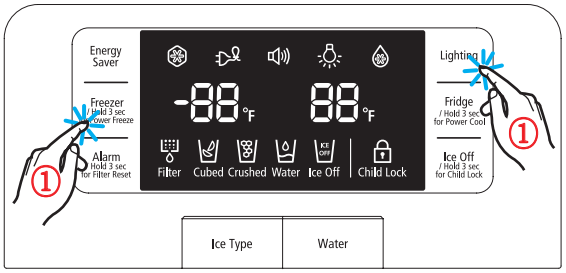
① If Energy Saver Key + Freeze Key are pressed for 3 seconds, Cooling Off mode will be started.

1) If Energy Saver Key + Freezer are pressed simultaneously for 3 seconds during normal operation, Cooling Off mode will be started with buzzer sound(ding-dong).
2) If above Energy Saver Key + Freeze/Power Freeze are pressed one more time, Cooling Off mode will be canceled.
3) If Cooling Off mode is selected, blinks "OF-OF" on the temperature setting display of the panel and it indicates the refrigerator has entered the Cooling Off mode.
4) During Cooling Off mode, if fresh food and freezer compartments sensors are higher than 149℉(65℃) Cooling Off mode will be canceled automatically and freezing operation will be returned.
(There is no buzzer sound when the Cooling Off mode is canceled by the temperature)
5) Operation contents of Cooling Off mode
- Display, Fan motor and etc operate normally, not to operate compressor only.
- Defrost is not operated. (including french heater)
- Display function of the initial real temperature is finished.
- Under the condition of Cooling Off mode, Cooling Off mode will be operated when Power On after Power OFF.

4-1-6. Option setting function

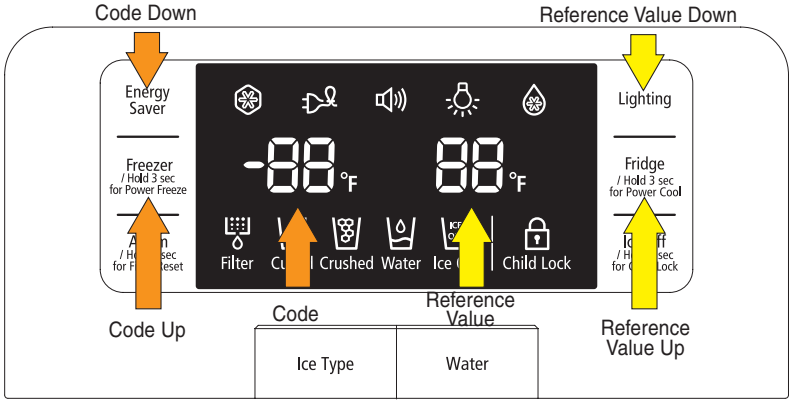
- If Freezer Key+ lighting Key are pressed simultaneously for 12 seconds during normal operation, fresh food and freezer compartments temperature display will be changed to option setting mode.

KEY operation method for changing to option mode



① If Freezer Key+ lighting Key are pressed simultaneously for 12 seconds, option setting mode will be started.

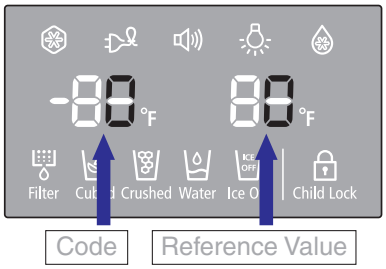
KEY control method after converting to option mode



∗ Key control in option mode

Energy Saver Key	Code Down key
Freezer Key	Code Up key
Lighting key	Reference Value down key
Fridge key	Reference Value Up key

- If the display changes to option setting mode, all displays will be off except freezer and fridge compartments temperature display as below.
  (Fresh food and freezer compartments case will be explained only because all options are operated with the same method according to the option table.)

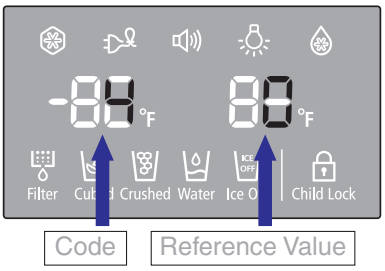


1) For example, if you want to change freezer compartment standard temperature to -4℉(-2°C) by operating option, do as below. This function is for changing the standard temperature.
   In -2℉(-19°C) of current temperature of freezer compartment, if you make the temperature lower to -4℉ (-2°C) by the option, the standard temperature would be controlled -6℉(-21°C)
   Therefore, if you change the setting of temperature option to -2℉(-19°C) on the panel, the appliance will be operated with -6℉(-21°C). It means that standard temperature is controlled -4℉(-2°C) less than setting temperature in the display.

NOTE

Basically, all the data in option has cleared from the factory.
Therefore, almost all setting value are "0".
But, some setting values could be changed for the purpose of improving performmance.
You need to check the product manual and/or specification.

2) After changing to the option mode, fresh food compartment "0" , freezer compartment "0" will be displayed. (Basically fresh food compartment "0", freezer "0" would be set at shipping process, but setting value could be changed for the purpose of improving product at mass producing process.)
   - If fresh food compartment "0" shows only, temperature reference value of freezer compartment will be set and current freezer compartment temperature code will be displayed on the freezer temperature display.
3) If freezer compartment "4" is set as below freezer compartment code after fresh food compartment "0 is set, standard temperature of freezer compartment will be lower than -4℉(-2.0°C).
   (Refer to the picture "changing the freezer compartment temperature")



: If you wait for 20 seconds after completing the setting, MICOM will save the setting value to the EEPROM and normal display will be returned and the option setting mode will be canceled.

4) Option changing method as above is the same as all RFG297** model.
5) By the same method as above, it is possible to control the fresh food compartment temperature, water supply, ice-maker harvest temperature/time, defrost return time, hysteresis by temperature, notch gap by temperature etc.
6) Option function is set in the EEPROM at shipping process in the factory.
   You would better not to change the option of your own.
   Completing the setting is that option function return to normal display after 20 seconds.
   Do not turn off the appliance before returning to the normal display mode.

NOTE

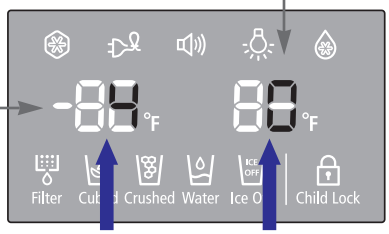
Option setting function exists in the other items.
We will skip the explanation of the other functions by the option because it is associated with refrigerator control function and is not needed at SERVICE.
(Please do not set the other options except above SERVICE Manual.)

4-1-7. Option TABLE

1) Temperature changing table of freezer compartment

Set item	Freezer Temp Shift
MODEL	RFG29*****
Reference Value	Fridge Room 7-SEG
	0

Setting value FZ compartment Code	Temp. compensation
0	0°F(0.0℃)
1	-1°F(-0.5℃)
2	-2°F(-1.0℃)
3	-3°F(-1.5℃)
4	-4°F(-2.0℃)
5	-5°F(-2.5℃)
6	-6°F(-3.0℃)
7	-7°F(-3.5℃)
8	+1°F(+0.5℃)
9	+2°F(+1.0℃)
10	+3°F(+1.5℃)
11	+4°F(+2.0℃)
12	+5°F(+2.5℃)
13	+6°F(+3.0℃)
14	+7°F(+3.5℃)
15	+8°F(+4.0℃)



Code | Reference Value

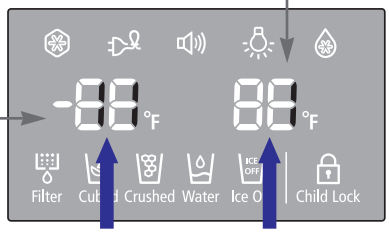
ex) If you want to change the freezer standard temperature to -4°F(-2°C)

2) Temperature changing table of fresh food compartment

Set item	Freezer Temp Shift
MODEL	RFG29*****
Reference Value	Fridge Room 7-SEG
	1

Setting value FZ compartment Code	Temp. compensation
0	0°F(0.0℃)
1	-1°F(-0.5℃)
2	-2°F(-1.0℃)
3	-3°F(-1.5℃)
4	-4°F(-2.0℃)
5	-5°F(-2.5℃)
6	-6°F(-3.0℃)
7	-7°F(-3.5℃)
8	+1°F(+0.5℃)
9	+2°F(+1.0℃)
10	+3°F(+1.5℃)
11	+4°F(+2.0℃)
12	+5°F(+2.5℃)
13	+6°F(+3.0℃)
14	+7°F(+3.5℃)
15	+8°F(+4.0℃)

ex) If you want to change the freezer compartment standard temperature to 4°F(2°C)



Code | Reference Value

4-2) Diagnostic method according to the trouble symptom(Flow Chart)

DATA1.Temperature table
Resistance value and MICOM port voltage of sensor according to the temperature
SENSOR CHIP : based on PX41C

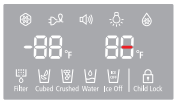
˚C	˚F	Voltage	Resistance	˚C	˚F	Voltage	Resistance	˚C	˚F	Voltage	Resistance
-50	-58	4.694	153319	-5	23	3.107	16419	40	104	1.153	2997
-49	-56.2	4.677	144794	-4	24.8	3.057	15731	41	105.8	1.124	2899
-48	-54.4	4.659	136798	-3	26.6	3.006	15076	42	107.6	1.095	2805
-47	-52.6	4.641	129294	-2	28.4	2.955	14452	43	109.4	1.068	2714
-46	-50.8	4.622	122248	-1	30.2	2.904	13857	44	111.2	1.040	2627
-45	-49	4.602	115631	0	32	2.853	13290	45	113	1.014	2543
-44	-47.2	4.581	109413	1	33.8	2.802	12749	46	114.8	0.988	2462
-43	-45.4	4.560	103569	2	35.6	2.751	12233	47	116.6	0.963	2384
-42	-43.6	4.537	98073	3	37.4	2.700	11741	48	118.4	0.938	2309
-41	-41.8	4.514	92903	4	39.2	2.649	11271	49	120.2	0.914	2237
-40	-40	4.490	88037	5	41	2.599	10823	50	122	0.891	2167
-39	-38.2	4.465	83456	6	42.8	2.548	10395	51	123.8	0.868	2100
-38	-36.4	4.439	79142	7	44.6	2.498	9986	52	125.6	0.846	2036
-37	-34.6	4.412	75077	8	46.4	2.449	9596	53	127.4	0.824	1973
-36	-32.8	4.385	71246	9	48.2	2.399	9223	54	129.2	0.803	1913
-35	-31	4.356	67634	10	50	2.350	8867	55	131	0.783	1855
-34	-29.2	4.326	64227	11	51.8	2.301	8526	56	132.8	0.762	1799
-33	-27.4	4.296	61012	12	53.6	2.253	8200	57	134.6	0.743	1745
-32	-25.6	4.264	57977	13	55.4	2.205	7888	58	136.4	0.724	1693
-31	-23.8	4.232	55112	14	57.2	2.158	7590	59	138.2	0.706	1642
-30	-22	4.199	52406	15	59	2.111	7305	60	140	0.688	1594
-29	-20.2	4.165	49848	16	60.8	2.064	7032	61	141.8	0.670	1547
-28	-18.4	4.129	47431	17	62.6	2.019	6771	62	143.6	0.653	1502
-27	-16.6	4.093	45146	18	64.4	1.974	6521	63	145.4	0.636	1458
-26	-14.8	4.056	42984	19	66.2	1.929	6281	64	147.2	0.620	1416
-25	-13	4.018	40938	20	68	1.885	6052	65	149	0.604	1375
-24	-11.2	3.980	39002	21	69.8	1.842	5832	66	150.8	0.589	1335
-23	-9.4	3.940	37169	22	71.6	1.799	5621	67	152.6	0.574	1297
-22	-7.6	3.899	35433	23	73.4	1.757	5419	68	154.4	0.560	1260
-21	-5.8	3.858	33788	24	75.2	1.716	5225	69	156.2	0.546	1225
-20	-4	3.816	32230	25	77	1.675	5039	70	158	0.532	1190
-19	-2.2	3.773	30752	26	78.8	1.636	4861	71	159.8	0.519	1157
-18	-0.4	3.729	29350	27	80.6	1.596	4690	72	161.6	0.506	1125
-17	1.4	3.685	28021	28	82.4	1.558	4526	73	163.4	0.493	1093
-16	3.2	3.640	26760	29	84.2	1.520	4369	74	165.2	0.481	1063
-15	5	3.594	25562	30	86	1.483	4218	75	167	0.469	1034
-14	6.8	3.548	24425	31	87.8	1.447	4072	76	168.8	0.457	1006
-13	8.6	3.501	23345	32	89.6	1.412	3933	77	170.6	0.446	978
-12	10.4	3.453	22320	33	91.4	1.377	3799	78	172.4	0.435	952
-11	12.2	3.405	21345	34	93.2	1.343	3670	79	174.2	0.424	926
-10	14	3.356	20418	35	95	1.309	3547	80	176	0.414	902
-9	15.8	3.307	19537	36	96.8	1.277	3428	81	177.8	0.404	877
-8	17.6	3.258	18698	37	98.6	1.253	3344	82	179.6	0.394	854
-7	19.4	3.208	17901	38	100.4	1.213	3204	83	181.4	0.384	832
-6	21.2	3.158	17142	39	102.2	1.183	3098	84	183.2	0.375	810

4-2-1. If the trouble is detected by self-diagnosis

- The error of sensor will be displayed on the front of display.
  when the error of sensor is detected at initial power ON, the appliance will not operated and display of abnormal sensor part will blink.
- The appliance will not stop operating when the error of sensor is detected during operation of the appliance.
  But normal freezing might be not operated if the appliance is operated by the emergency operation mode. You would better to check the appliance according to the self-diagnosis of the manual.

1) If ICE Maker Sensor has trouble

ERROR Code



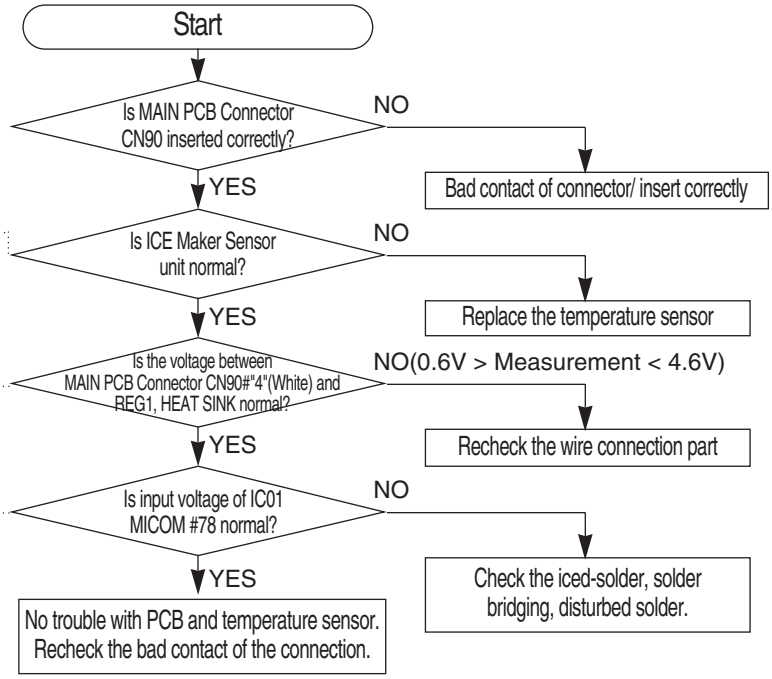
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
ICE MAKER : CN90#8 ↔#4 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

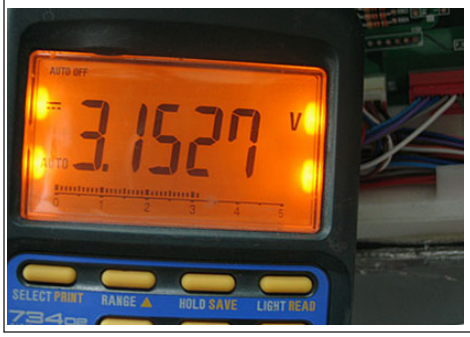
Sensor MICOM/Connector number	
ICE Maker	Connector CN90#"4"(White) and REG1 HEAT-SINK PCB common Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #78, CN90#4(White) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #9(R901) due to the SMD MICOM

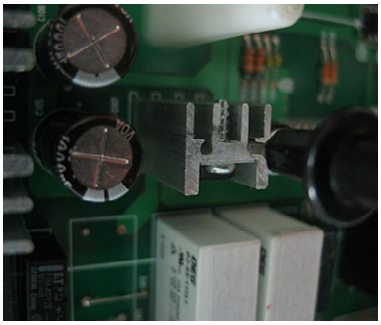


☞ Checking method of ICE Maker Sensor resistance CN90#"8(Sky-blue) ↔ #4"(White)
- Compare the temperature table after the measure.

☞ Checking method of ICE Maker Sensor resistance
- Measure the voltage of Sensor Check Point #9(IC01 MICOM #78) on PCB or CN90#4(White) ↔ REG1, HEAT SINK
- Compare the temperature table after the measure.
  Measuring voltage of CN90#4(White) ↔ REG1, HEAT SINK are below.

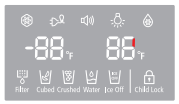


typical PCB Ground
REG1 HEAT-SINK



2) If R Sensor has trouble

ERROR Code



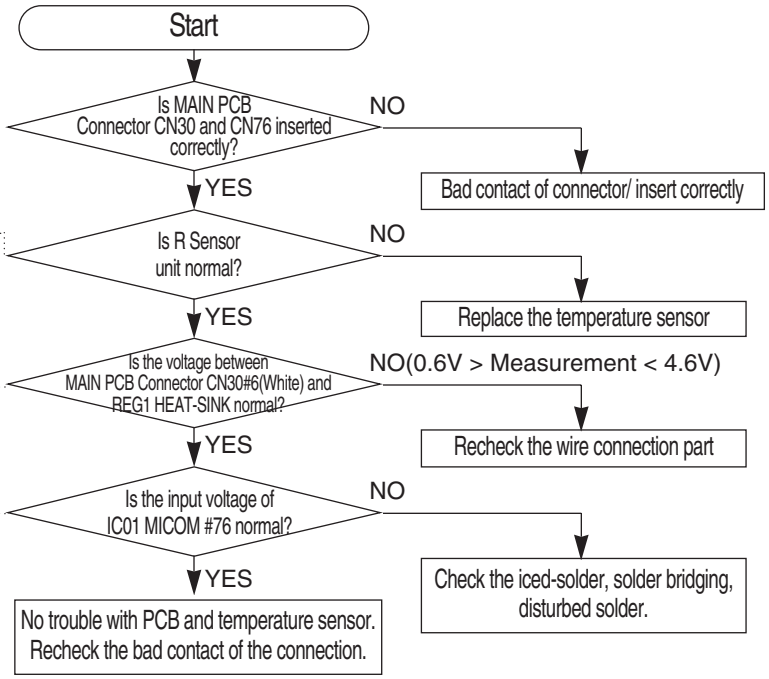
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
R : CN30#6 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

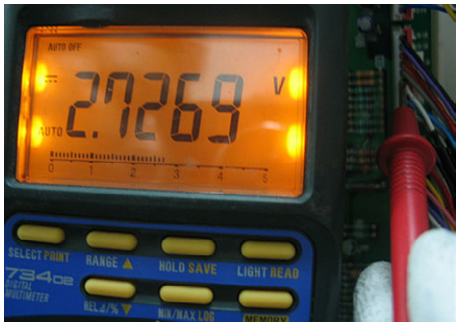
Sensor MICOM/Connector number	
R	Connector CN30#6(White) to REG1 HEAT-SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage IC01 MICOM #76, CN30#6(White) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #3(R311) due to the SMD MICOM

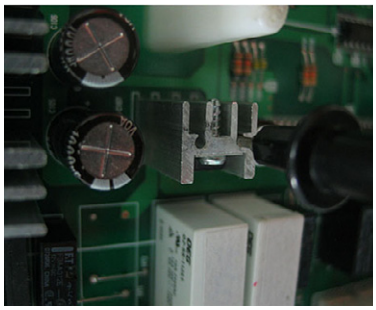


☞ Checking method of R Sensor resistance
CN30#6(White) ↔ CN76#1(Gray) Compare the temperature table after measurment.

☞ Checking method of R Sensor resistance
- Measure the voltage of Sensor Check Point #3(IC01 MICOM #76) on PCB or CN30#6(White) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.
Measuring voltage of CN30#6(White) ↔REG1, HEAT SINK are as below.

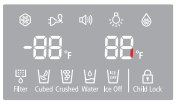


Typical PCB Ground
REG1, HEAT SINK



3) If R DEF Sensor has trouble

ERROR Code



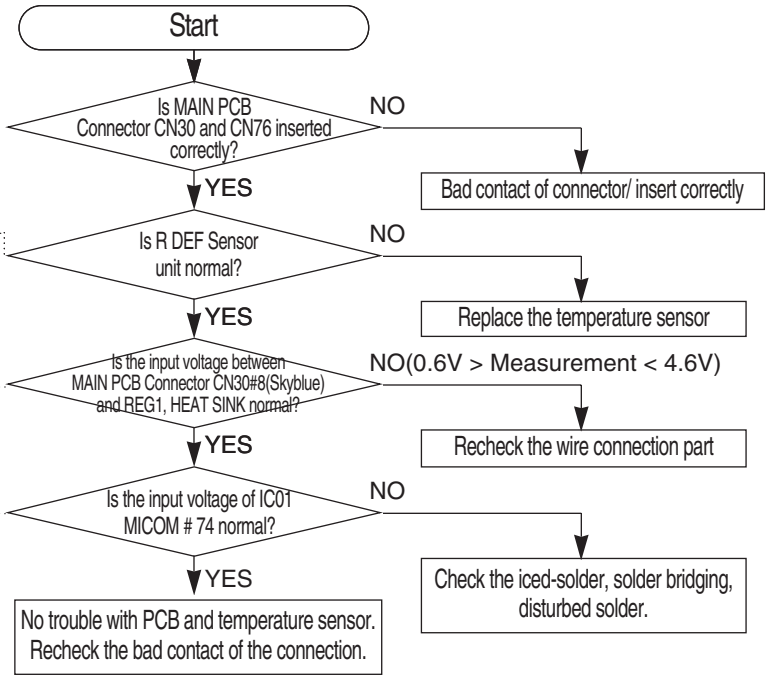
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
R-DEF : CN30#8 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

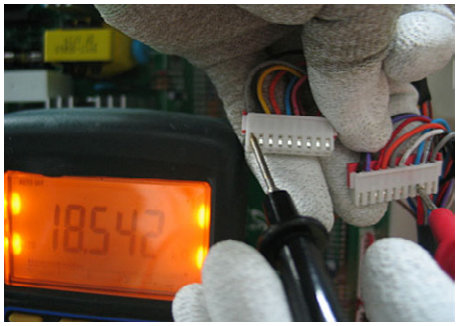
Refer to circuit diagram in the manual

Sensor MICOM/Connector Number	
R DEF	Connector CN30-"8"(Sky-blue) and REG1, HEAT SINK PCB common Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #74, CN30#8(Sky-blue) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #5(R313) due to the SMD MICOM

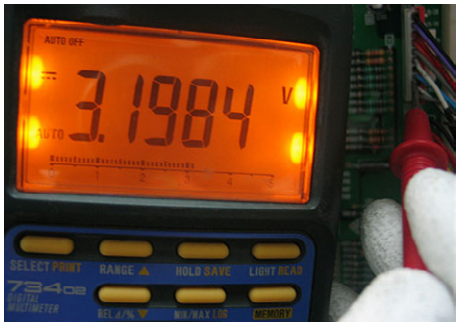


☞ Checking method of R Sensor resistance
CN30#8(Sky-blue) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.

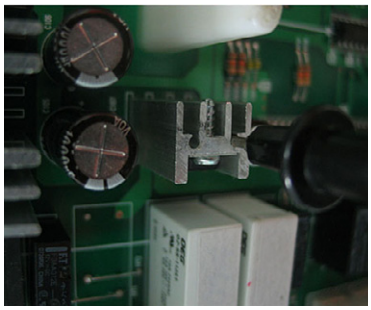


☞ Checking method of R DEF Sensor resistance
- Measure the voltage of Sensor Check Point #5(IC01 MICOM #74) on PCB or CN30#8(Sky-blue)↔REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30#8(Sky-blue) ↔ REG1, HEAT SINK are as below.



Typical PCB Ground
REG1, HEAT SINK



4) If Ambient Sensor has trouble

ERROR Code

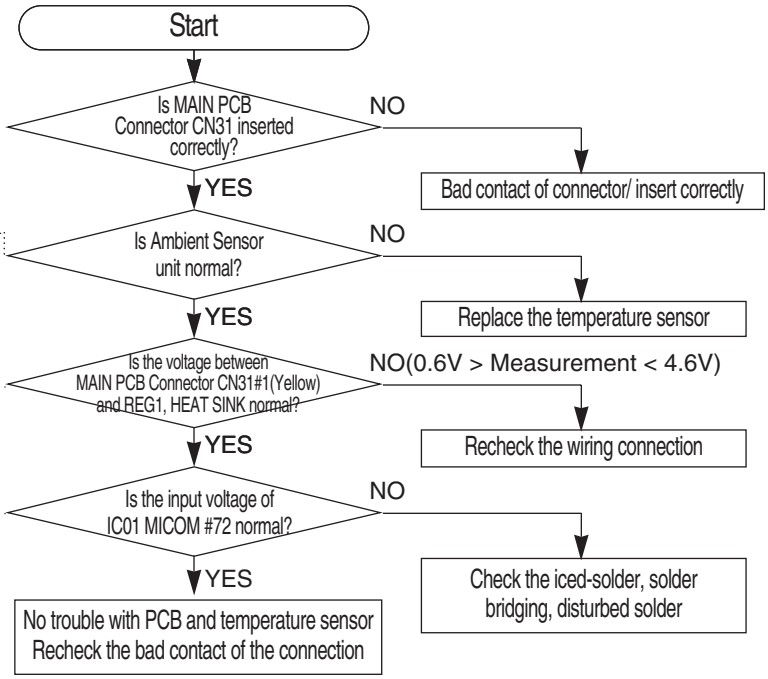
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
Ambient : CN31#1 ↔ #4 measuring resistance value
** Placed in the right top table of upper hinge.
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
Ambient	Connector CN31#1(Yellow) to REG1, HEAT-SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

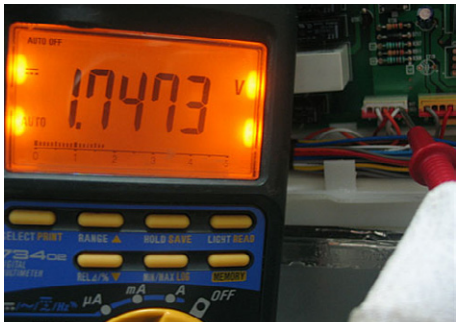
Measuring voltage of IC01 MICOM #72, CN31#1(Yellow) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #7(R307) due to the SMD MICOM



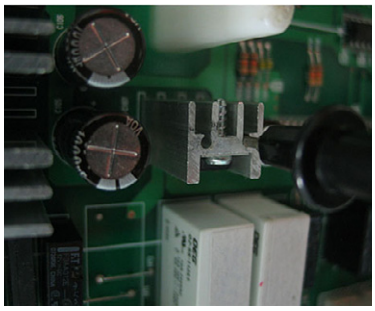
☞ Checking method of Ambient Sensor resistance CN31#1(Yellow) ↔ #4(Yellow)
- Compare the temperature table after measurement.

☞ Checking method of Ambient Sensor voltage
- Measure the voltage of Sensor Check Point #7(IC01 MICOM #72) on PCB or CN31#1(Yellow) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN31#1(Yellow) ↔ REG1, HEAT SINK are as below

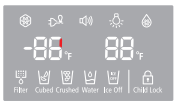


Typical PCB Ground
REG1 Heater Sink



5) If F Sensor has trouble

ERROR Code



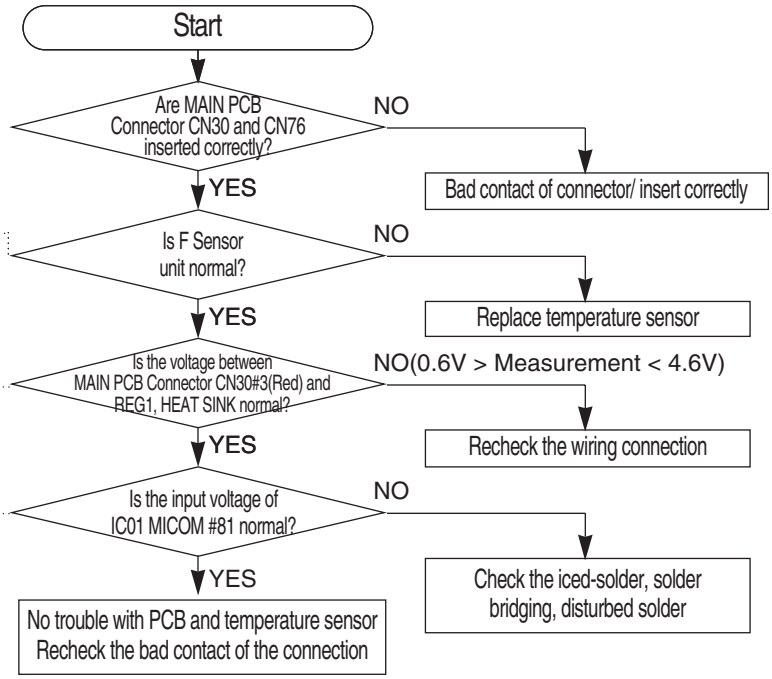
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
F : CN30#3 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
F	Connector CN30#3(Red) to REG1, HEAT SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

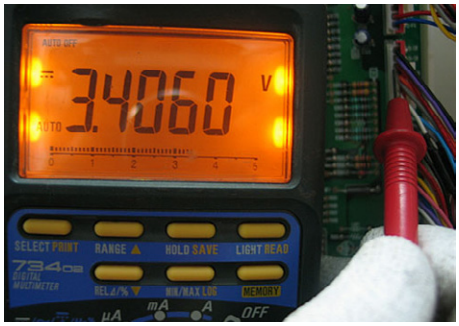
Measuring voltage of IC01 MICOM #81, CN30#3(Red) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #1(R309) due to the SMD MICOM



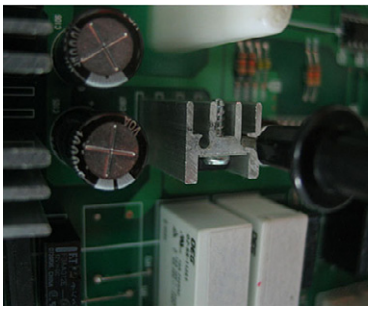
☞ Checking method of F Sensor resistance
CN30#3(Red) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.

☞ Checking method of F Sensor voltage
- Measure the voltage of Sensor Check Point #1(IC01 MICOM #81) on PCB or CN30#3(Red) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30#3(Red) ↔ REG1, HEAT SINK are as below.



Typical PCB Ground
REG1 Heater Sink



6) If F DEF Sensor has trouble

ERROR Code

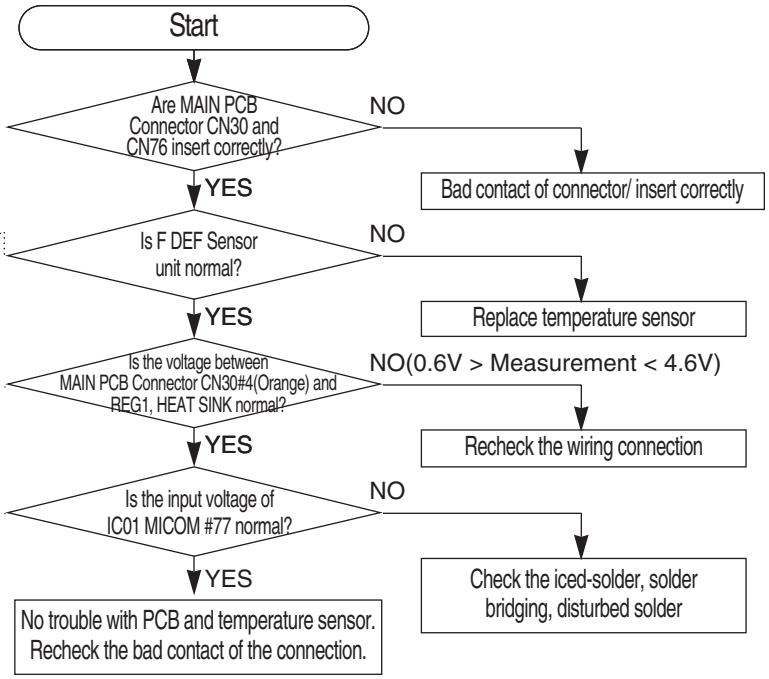
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
F-DEF : CN30#4 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

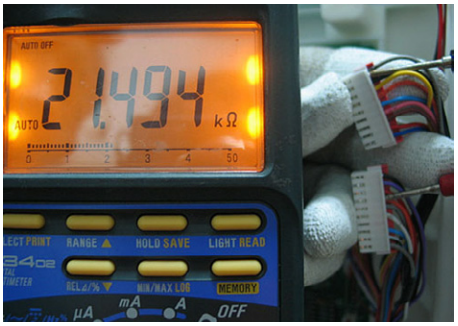
Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
F DEF	Connector CN30#4(Orange) to REG1, HEAT SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #77, CN30#4(Orange) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #2(R310) due to the SMD MICOM

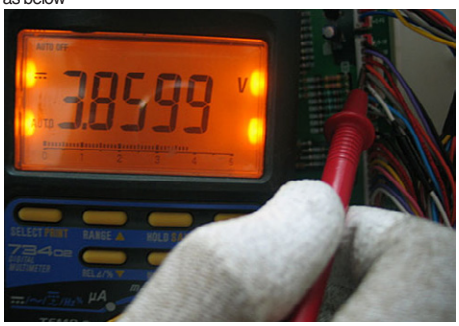


☞ Checking method of F DEF Sensor resistance
CN30#4(Orange) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.

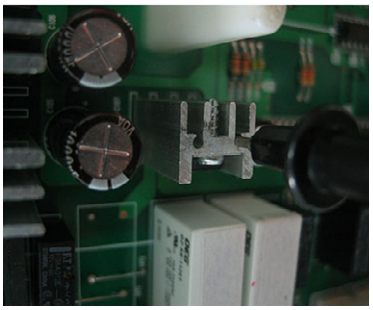


☞ Checking method of F DEF Sensor voltage
- Measure the voltage of Sensor Check Point #2(IC01 MICOM #77) on PCB or CN30#4(Orange) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30#4(Orange) ↔ REG1, HEAT SINK are as below



Typical PCB Ground
REG1, Heater Sink



7) If Ice Room Sensor has trouble

ERROR Code

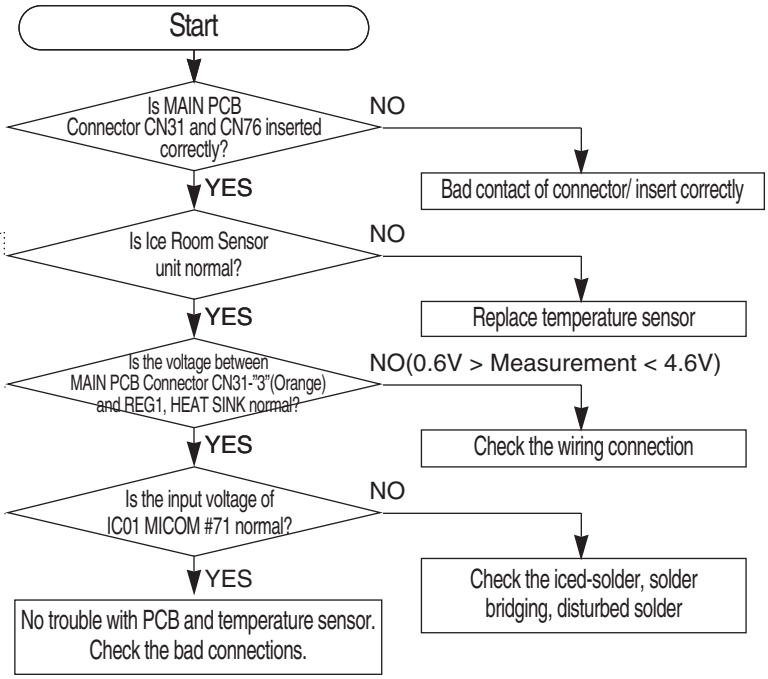
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
Ambient : CN32#3 ↔ CN76#1 Measure the resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

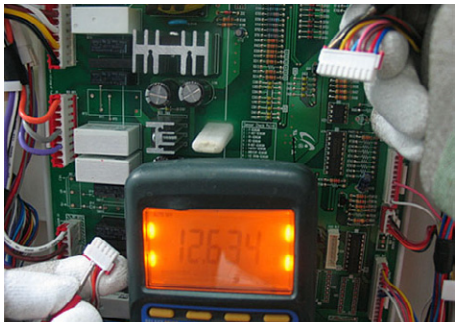
Refer to the circuit diagram in this manual

Sensor MICOM/Connector number	
Ice Room	Connector CN31-"3"(Orange) and REG1, HEAT SINK from typical PCB Ground
Voltage measured between 4.6V ~ 0.6V.	

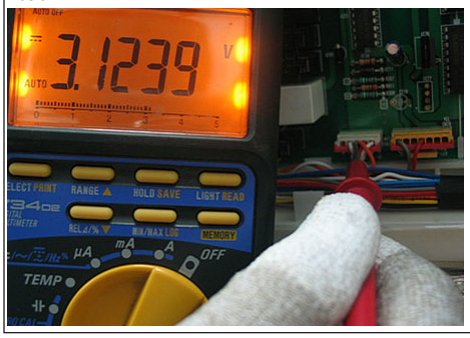
Measuring voltage of IC01 MICOM #71, CN31-"3"(Orange) and REG1, HEAT SINK from typical PCB Ground are similar.
→ Check the measure on the SENSOR MARKING #8(R308) due to the SMD MICOM



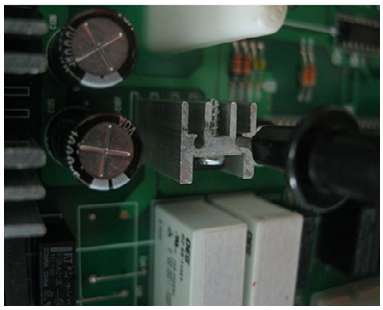
☞ Checking Mehod of Ice Room Sensor voltage
CN31-"3"(Orange) ↔ CN76-"1" (Gray)
- Compare with the temperature table after measurement.



☞ Checking Method of Ice Room Sensor Voltage
- Measure the voltage of sensor checking point #8(IC01 MICOM #71) on PCB or CN31-"3" (Orange) ↔ REG1, HEAT SINK
- Compare with the temperature table after measurement.
Measured voltage of CN31-"3" (Orange) ↔ REG1, HEAT SINK are as below



Typical PCB Ground
REG1, HEAT SINK



8) If Pantry Sensor has trouble

ERROR Code

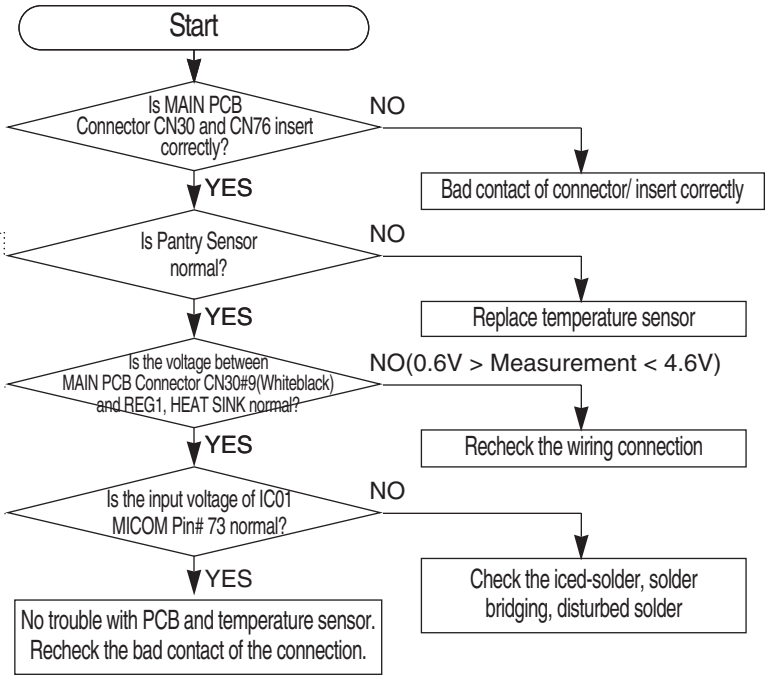
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
Pantry : CN30#9 ↔ CN76 #1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

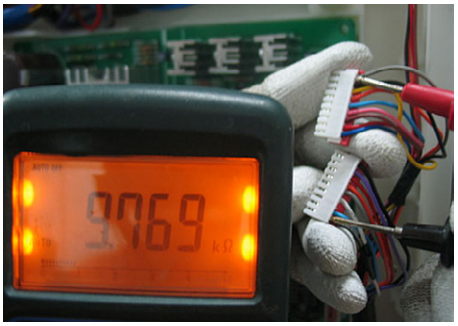
Refer to circuit diagram in the manual

Sensor MICOM/Connector number	
Pantry	Connector CN30#9(White-black) to REG1 HEAT SINK PCB typical Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #73, CN30#9(White-black) and REG1, HEAT SINK from PCB typical Ground part are similar.
→ Check the measure on the SENSOR MARKING #6(R314) due to the SMD MICOM

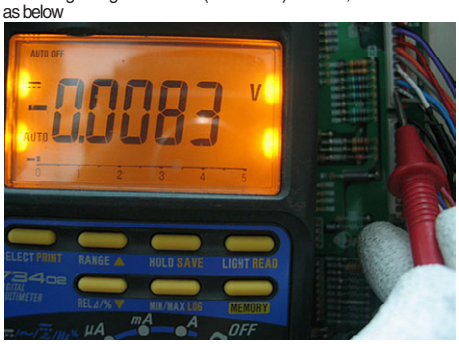


☞ Checking method of Pantry Sensor resistance
CN30#9(White-black) ↔ CN76#1(Gray)
- Compare the temperature table after measurement.

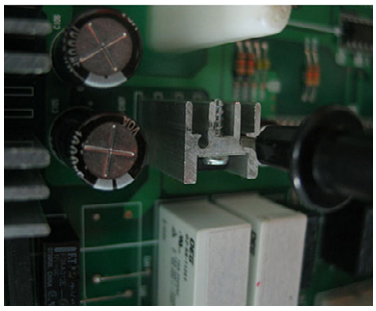


☞ Checking method of Pantry Sensor voltage
- Measuring voltage of Sensor Check Point #6(IC01 MICOM #73) on PCB or CN30#9(White-black) ↔ REG1, HEAT SINK
- Compare the temperature table after measurement.

Measuring voltage of CN30#9(white-black)↔REG1, HEAT SINK are as below

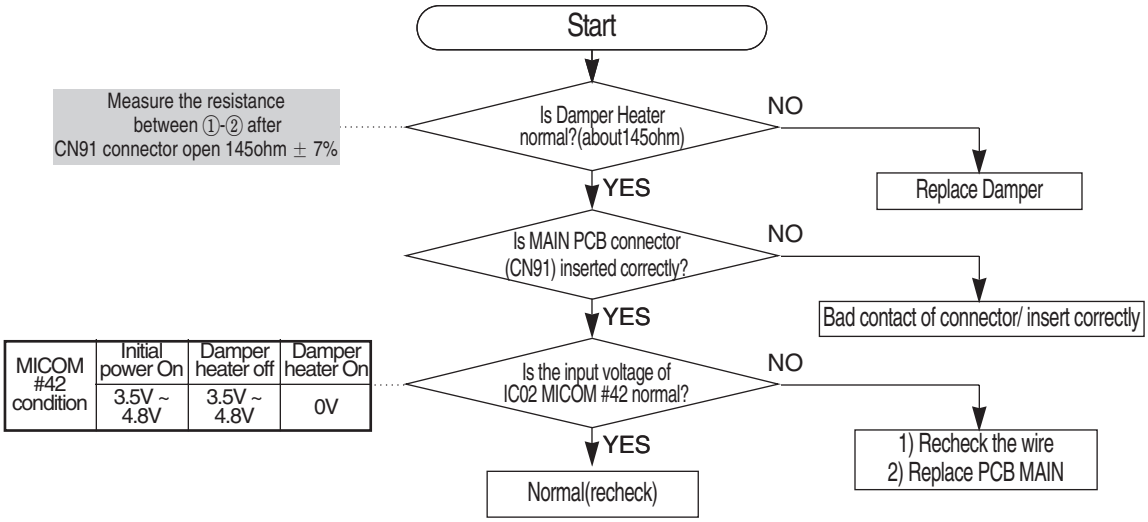


Typical PCB Ground
REG1 Heater Sink



9) If Pantry Room Damper Heater has trouble

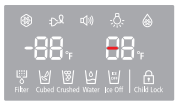
ERROR Code

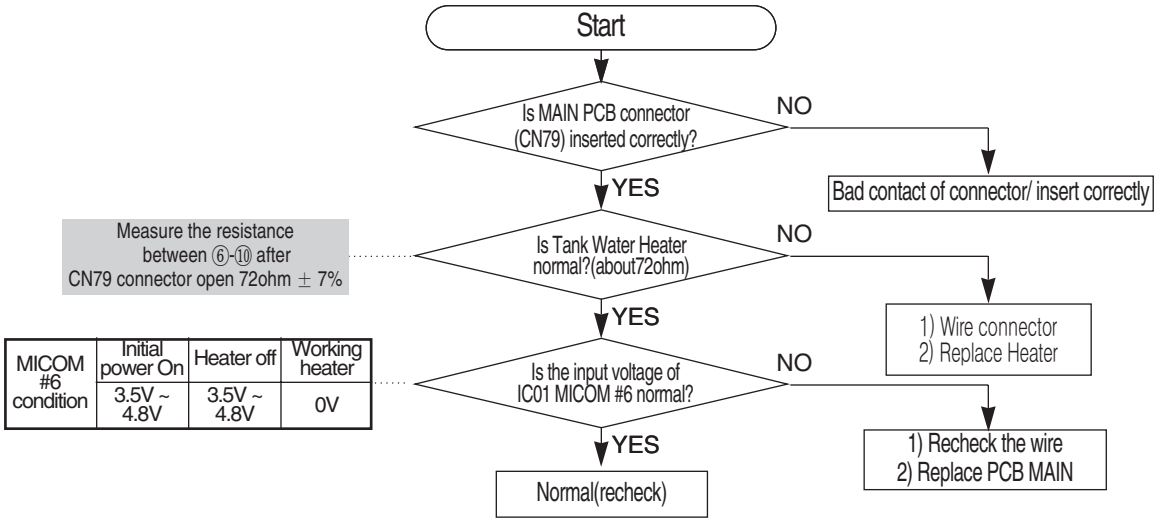


☞ Checking method of Pantry Room Damper resistance CN91#1(Black) ↔ #2(Brown)
** ∞ Ω : Open(wire disconnection, heater disconnection) trouble / 0 Ω : Short trouble

10) If Tank Water Heater has trouble

ERROR Code



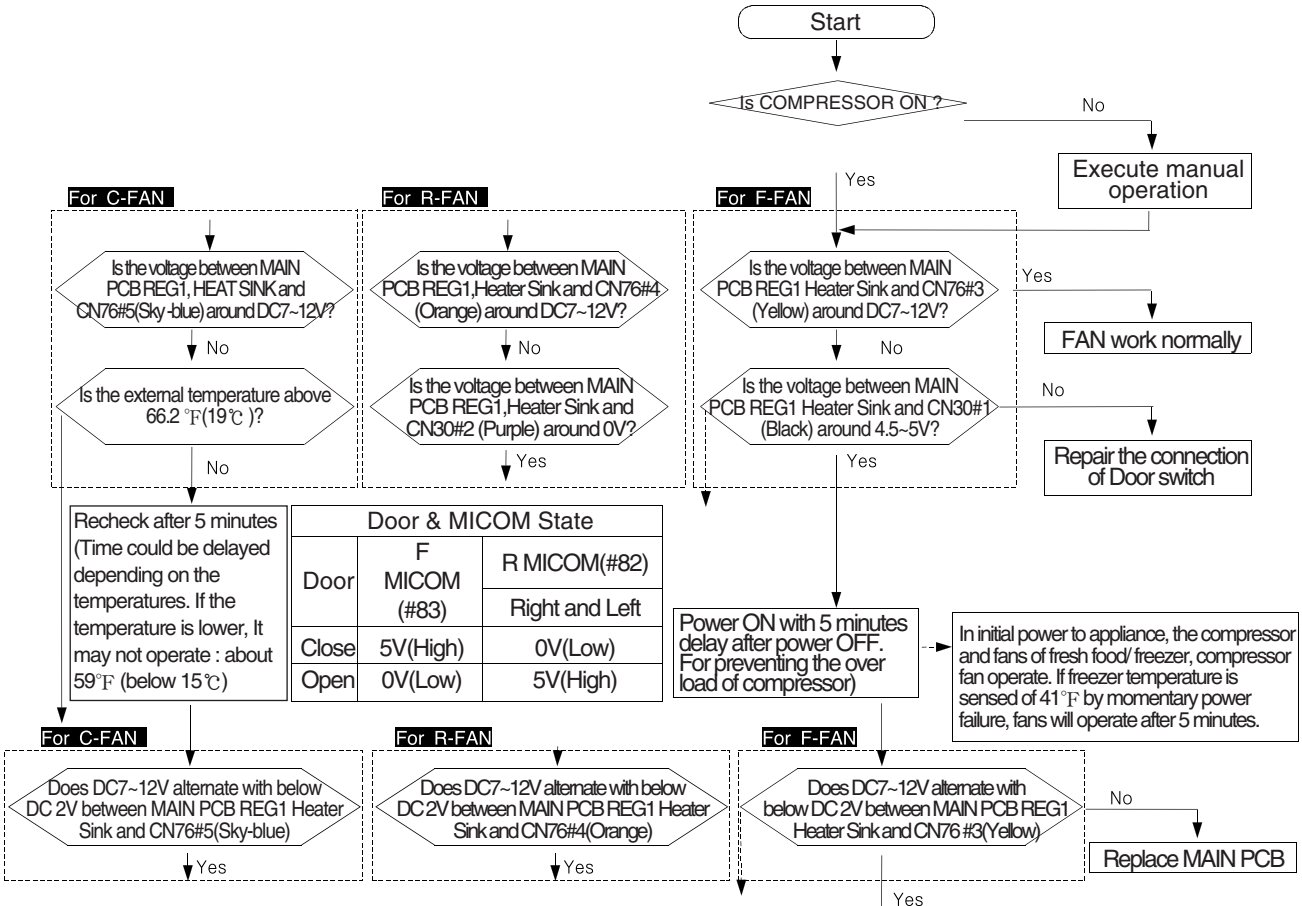


MICOM #6 condition	Initial power On	Heater off	Working heater
	3.5V ~ 4.8V	3.5V ~ 4.8V	0V

☞ Checking method of Tank Water Heater resistance CN79#6(Pink) ↔ #10(White)
** ∞ Ω : Open(wire disconnection, heater disconnection) trouble / 0 Ω : Short trouble

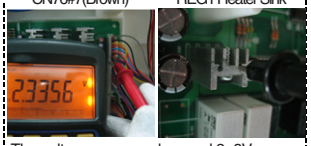
4-2-2. If FAN does not operate

- The refrigerator of this model has BLDC FAN motor. BLDC motor is driven by DC 7~12V.
- On the normal condition of COMP ON, it operates together with F-FAN motor.
  If door is opened and closed once at a high ambient temperature, it will be operated after 1 minute delay.
  Therefore, you are advised not to taken it for an error.
-. If there is a trouble, you should select the self-diagnostic function to check the trouble before power off.



F FAN pulse voltage CN76#7(Brown)

Typical PCB Ground REG1 Heater Sink



The voltage measured around 2~3V with multi-meter though the voltage is very weak because of pulse signal

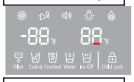
Reference

CN76-7(F),8(R),9(C)will generate the pulse signal when motor rotates.
These signals will be inputted into MICOM.
Unless signals are not inputted during motor operating, will be ON 10 seconds after fan Off. But if signals are not still entered, the above operation will restart four times more.
If signals are not entered continuously, the motor will be restarted after 10 seconds.
This function is effective when the normal operation of motor would be restrained by foreign matters such as ice.

◆ Expected causes
① Check that if FAN-MOTOR has failure itself.
② Check that if wiring connection has bad contact.
③ Check the input of the fan motor rotation pulse when motor fan operates.

☞ Display for checking the self-diagnostic function

R FAN ERROR



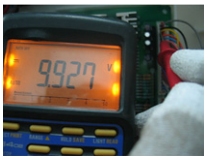
F FAN ERROR

C FAN ERROR

☞ Checking method of R,F,C FAN Motor voltage
The voltage between PCB typical Ground REG1 Heater Sink and
F FAN ; CN76#3(Yellow) shall be less than DC 7~12V.
R FAN ; CN76#4(Orange) shall be less than DC 7~12V.
C FAN ; CN76#5(Sky-blue) shall be less than DC 7~12V.
- Recheck if resistance values are different after measuring.

Typical PCB Ground REG1 Heater Sink

1) F-FAN



2) R-FAN

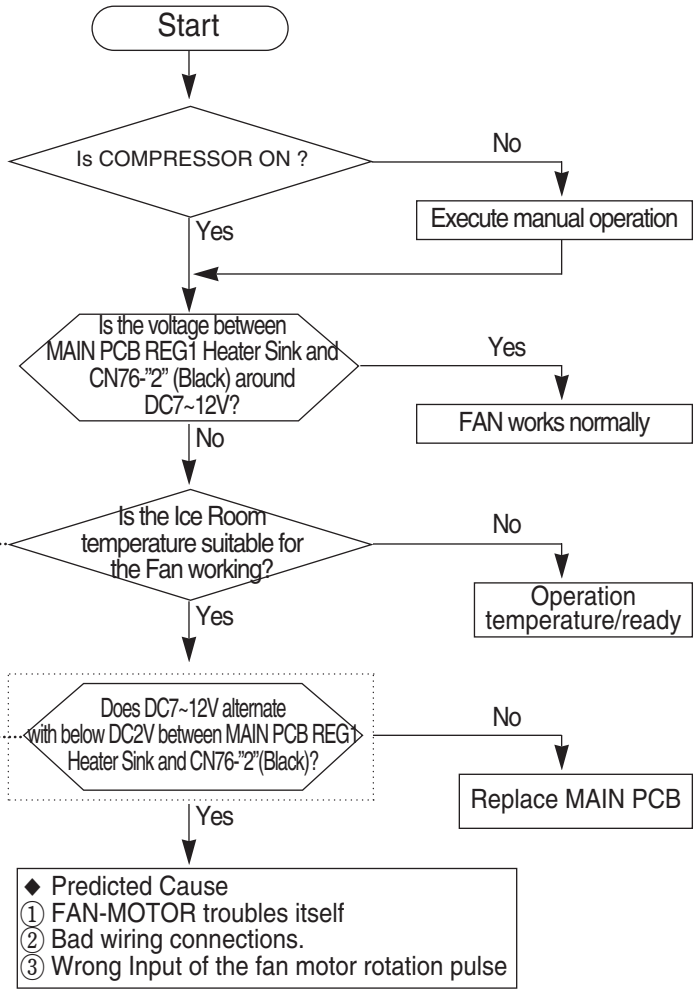
3) C-FAN

4-2-3. If ICE Room Fan does not operate

- This refrigerator has BLDC FAN motor. BLDC motor is driven by DC7~12V.
- When COMP ON, normally operates with F-FAN motor.
- If there is any trouble, you should select the self-diagnostic function to check the trouble before power off.

- When pressing the ICE TEST S/W for a certain period of time (over 1.5sec), the function is accomplished. After beginning of TEST mode, Ice maker heater turns on for initial 2 minutes, if the ice making temperature is below 0℃.
- If it exceeds 0℃, Ice maker heater turns on for initial 30 seconds.
- After Ice maker heater turns on for 30 seconds, it turns off and then Ice maker motor turns on.
- As the Ice maker motor turns on, TEST MODE COUNT operates. (6 minutes count)

Condition
- Ambient temperature : 32℃/75%
- Notch : 2℉/38℉(-19.0℃/3.3℃)
  Initial full of ice bucket capacity : 794 g, 58ea



Ice Room control temperature	
Ice ON	8.6℉(-13℃)
Ice OFF	26.6℉(-3℃)

Reference

CN76 #6 will generate the pulse signal when motor rotates.
These signals will be input into MICOM.
Unless signals are not input during motor operating, will be ON 10seconds after fan OFF. But if signals are not still taken, the above operation will be retried four times more. If signals are not taken continuously, the motor will be restarted after 10 minutes.
This function is against the case that motor movement would be restrained by foreign matters like ice.

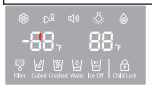
FAN pulse voltage CN76-"6"(Pink)

Typical PCB Ground REG1 Heater Sink

The voltage is variable due to pulse signal but measured about 2~3V with the Multi-Meter.

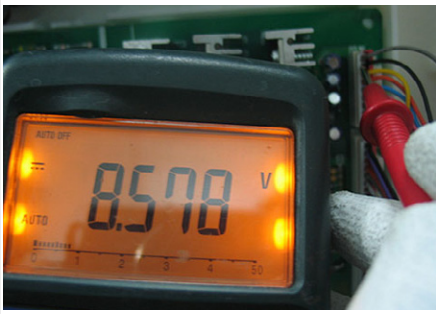
☞ Display for checking the self-diagnostic function

Ice Room FAN ERROR

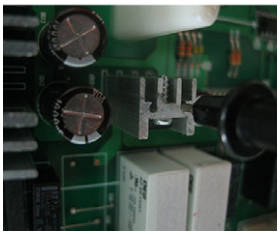


☞ Checking method of Ice Room FAN Motor Voltage with the voltage between typical PCB Ground REG1 Heater Sink and Ice Room FAN ; CN76-"2"(Black) shall be less than DC 6~12V.
- Additional check if resistance values are different after measurement.

1) Ice Room - FAN



Typical PCB Ground REG1 Heater Sink

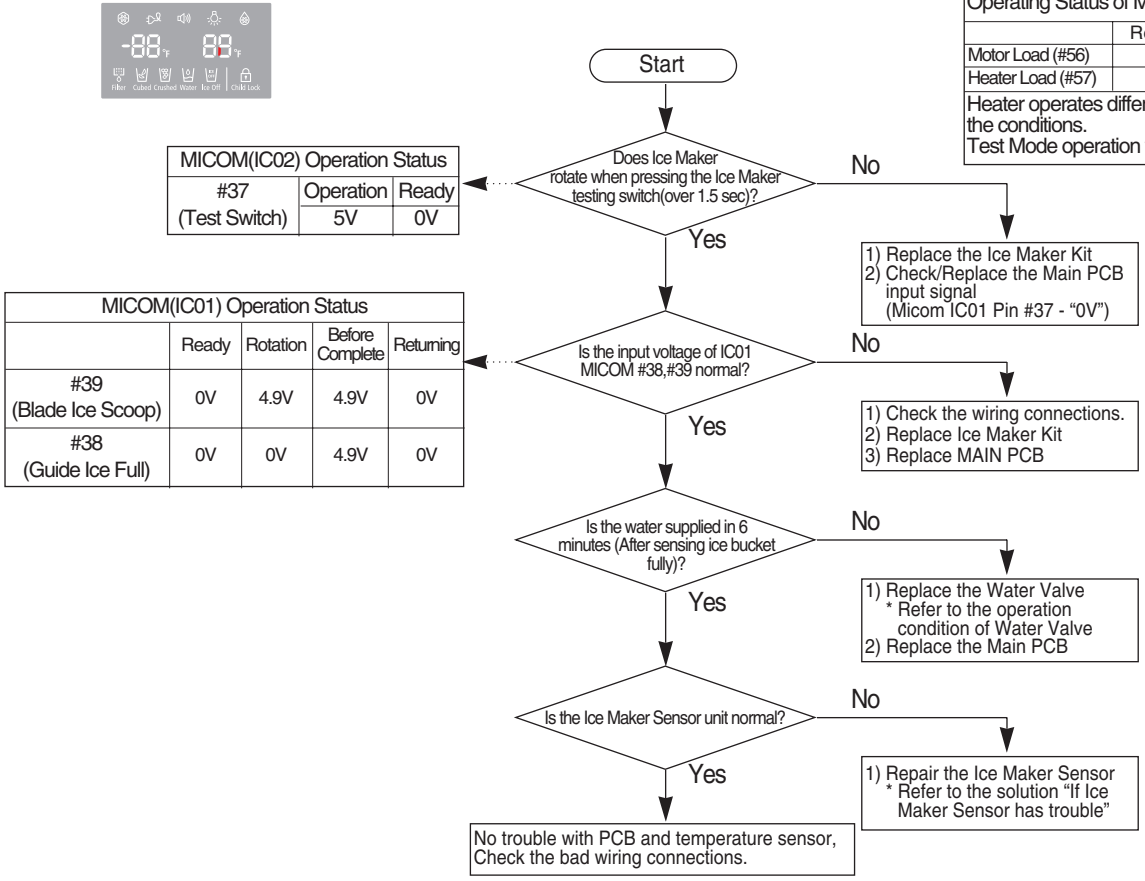


4-2-4. If Ice Maker does not operate

1. Water is automatically supplied to the Ice Maker depending on temperature & time condition and Ice Maker Dispenses cubed or crushed ice.
2. Power is applied to the one end of wires. Be careful when disassembling and shall refer to its exploded diagram in any case.
3. Ice Maker operation shall be checked after pressing the Ice Maker testing switch. (Freezer Ice Maker) It is not possible to check when the power is disengaged.
4. We recommend that TWO PEOPLE check the PCB and Ice Maker because they are located at front and rear side each.
5. Be careful! The Ice Maker Heater can cause personal injury like burn.

Displays ERROR Code

Operating Condition when motor rotates Operating Status of Micom(IC01)		
	Ready	Operation
Motor Load (#56)	0V	5V
Heater Load (#57)	0V	5V
Heater operates differently according to the conditions. Test Mode operation will be 30 sec.		



MICOM(IC02) Operation Status		
#37 (Test Switch)	Operation	Ready
	5V	0V

MICOM(IC01) Operation Status				
	Ready	Rotation	Before Complete	Returning
#39 (Blade Ice Scoop)	0V	4.9V	4.9V	0V
#38 (Guide Ice Full)	0V	0V	4.9V	0V

☞ Checking Method of ICE Maker Voltage
With typical PCB Ground REG1 Heater Sink and
1) Test Switch operation (press selected) : CN90-"5" (Gray) shall be DC 0V.
Test Switch ready ; CN90-"5" (Gray) shall be less than DC 5V.

1)Test Switch operating

1)Test Switch ready

Typical PCB Ground REG1 Heater Sink

☞ Checking Method of ICE Maker Voltage
With typical PCB Ground REG1 Heater Sink and
2) IC02 MICOM #39 voltage ; Ready(0V) → Rotate (4.9V) → Before complete(4.9V) → Return(0V)
* MICOM #39 voltage is same as Connector CN90-"7"(Purple)
3) IC02 MICOM #38 voltage ; Ready(0V) → Rotate (0V) → Before complete(4.9V) → Return(0V)
* MICOM #38 voltage is same as Connector CN90-"6"(Blue)

☞ Check the ICE Maker Heater & Motor Resistance
CN 73 and CN74 combined and used the same Connector(P13)

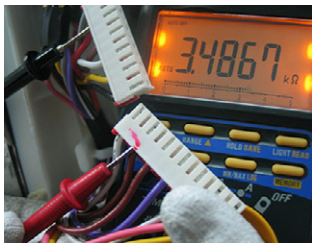
1) Measuring the Ice Maker Heater resistance values

13P#13(White) & CN70#9(Red)

Resistance value : 91(364)Ohm± 7%

2) Measuring the Ice Maker Motor resistance values

13P#11(White) & CN70#9(Red)

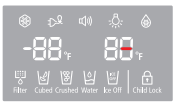


Resistance value : 3.5KOhm± 7%

4-2-5. If defrost does not operate (F,R DEF Heater)

- If defrost has trouble, select the self-diagnostic function to detect the error of defrost heater before Power Off. (Check the function with the self-diagnostic function)

R DEF ERROR



F DEF ERROR

Measuring point of resistance value according to heater
F-DEF(Ice Duct parallel) : CN70#7(Brown) ↔ CN71#9 (Orange) measuring resistance value(55 ohm ± 7%)
R-DEF : CN70#5(White)↔CN71#9(Orange) measuring resistance value(110 ohm ± 7%)
** 0 Ω : Short trouble / ∞ Ω : Open(bimetal, heater) trouble

**Measuring point of resistance value according to sensor **
F-DEF : CN30#4 ↔ CN76#1 measuring resistance value
R-DEF : CN30#8 ↔ CN76#1 measuring resistance value
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Resistance value of sensor according to temperature		
86°F(30℃)	4.22 KΩ	If you need the temperature with detail, refer to DATA1. temperature table
68°F(20℃)	6.05 KΩ	
50°F(10℃)	8.87 KΩ	
32°F(0℃)	13.29 KΩ	
14°F(-10℃)	20.42 KΩ	
-4°F(-20℃)	32.23 KΩ	
-22°F(-30℃)	52.41 KΩ	

**Measuring point of resistance value according to sensor **
F-DEF : CN30#4 ↔ CN76#1 measuring resistance value
R-DEF : CN30#8 ↔ CN76#1 measuring resistance value
** 0V: Short trouble / 5V: Open trouble

Start

Are the all deforst heater normal?
- No → Check the bimetal, heater disconnection, wiring connection etc.
- Yes ↓

Is defrost sensor by self-diagnostic normal?
- No → Refer to self-diagnostic function in the manual → Replace the applicable sensor
- Yes ↓

Is the temperature of defrost sensor lower than 53.6°F(12°C)?
- No → manual operation for a certain time
- Yes ↓

Manual defrosting of fresh food and freezer compartments operate simultaneously.

If Energy Saver + Fridge/Power Cool Key are pressed simultaneously for 8 seconds and then select any key, 3rd test mode(manual defrosting) will be operated.

Is power applied to each defrost heaters?
- No → Is connection terminal of MAIN PCB part normal?
- Yes ↓

Does the system return to cooling operation after heating for specified time?
- No → Recheck the applicable sensor.
- Yes → Normal

Reference If defrost sensor temperatures of fresh food and freezer compartments are higher than 50°F(10℃), 53.6°F(12℃) by the heating from heater, heating would be finished and will return to cooling operation after a pause.

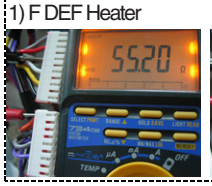
Is connection terminal of MAIN PCB part normal?
- No → Repair connection terminal
- Yes ↓

Check bimetal, heater itself, disconnection etc.

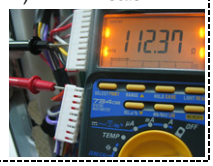
Replace failure Relay or replace PCB ASS'Y

☞ Checking method of F,R DEF Heater resistance value
F DEF ; CN70#7(Brown) ↔ CN71#9(Orange)
R DEF ; CN70#5(White) ↔ CN71#9(Orange)
- Recheck if resistance values are different after the test

1) F DEF Heater



2) R DEF Heater



4-2-6. If Power is not supplied

Caution
At the power of main PCB, the AC115V power and a high-voltage over DC 170V are occurred.Please take care of yourself during repair and measurement.

- Refer to the function and reference parts in the manual when check the MAIN PCB

Start

Is the plug connected in?
- No → Connect plug again, check the plug loosening
- Yes ↓

Is power 115V applied to the both terminals of SMPS PCB CN70 #11-#9?
- No → Check the assembly and wire connection
- Yes ↓

Check in SMPS PBA

Is fuse on the SMPS PCB down?
- Yes → 1) Replace FUSE AC 250V 2.0A 2) Replace PCB ASS'Y
- No ↓

Is DC170V applied to the both terminals of BD1+,-
- No → 1) Check PCB PATTERN and replace BD1 2) Replace PCB ASS'Y
- Yes ↓

Is DC5.8V applied between TOP switch 246Y C and S?
- No → Replace PCB ASS'Y
- Yes ↓

Is 13V applied to the both terminals of C107?
- No → Replace PCB ASS'Y
- Yes ↓

Is 5V applied to the both terminals of C109?
- No → 1) Check REG1 (KA7805) 2) Replace PCB ASS'Y
- Yes ↓

Does Panel PCB operate normally?
- No → 1) Check assembly wire and repair 2) Replace Panel PCB
- Yes ↓

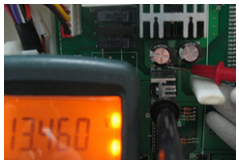
Is the load (i.e. Relay) normal?
- No → 1) Check the contact of lead wire 2) Replace the applicable relay / PCB MAIN
- Yes ↓

Is there any PCB soldering, short, breakage?
- Yes → 1) Solder again 2) Replace PCB MAIN
- No → Normal(Recheck)

- Check MAIN PCB connection
- Check the connections between cabinet and door
- Check the connections between door and panel PCB

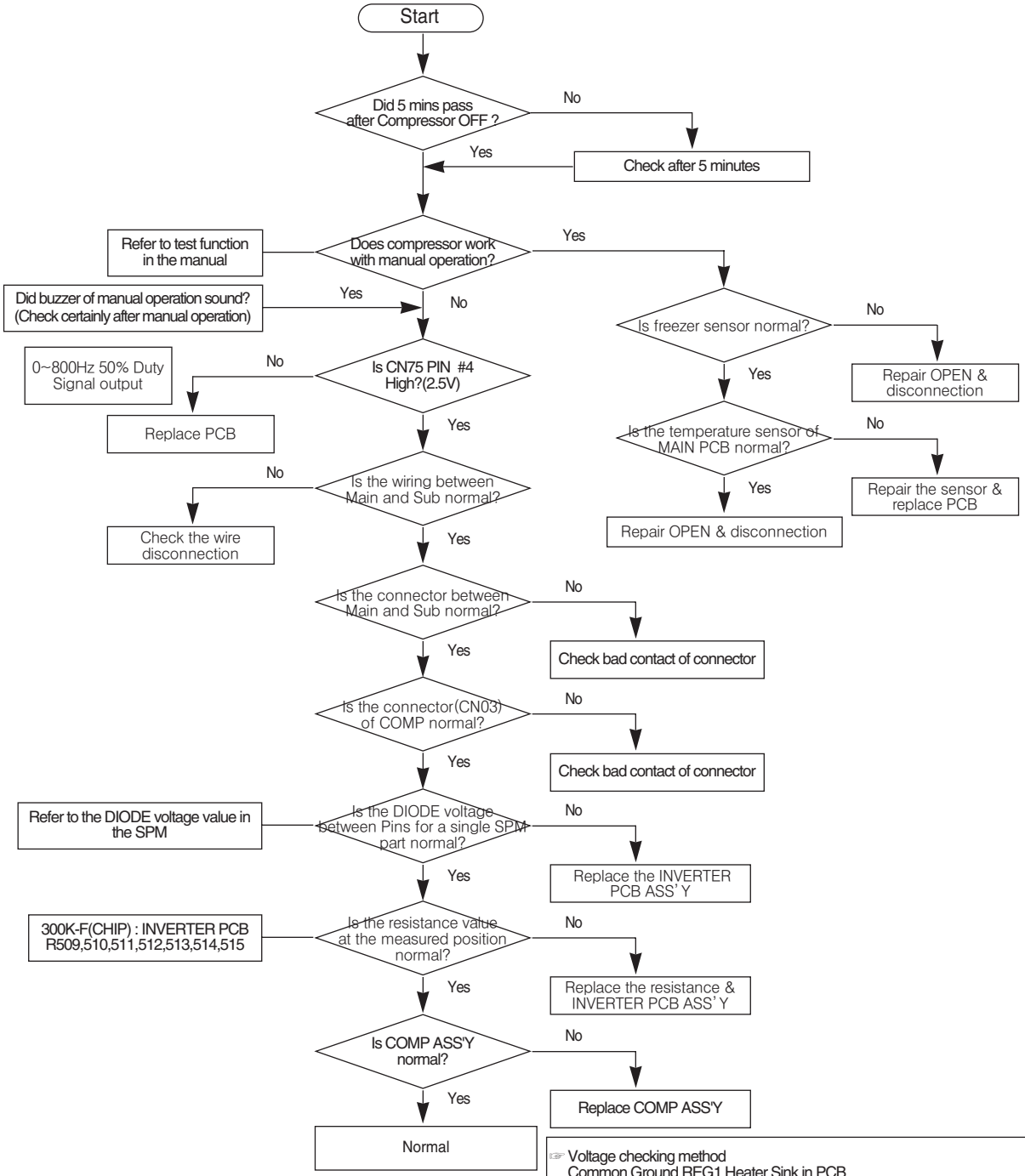
☞ Checking method of voltage
CN70 input ; CN70#9(Red) ↔ #11(Gray)
AC voltage

☞ Checking method of DC 2nd output voltage
REG1 input ; Regulator 7805 →same as C107 terminals.
DC 13.0V ± 0.8V

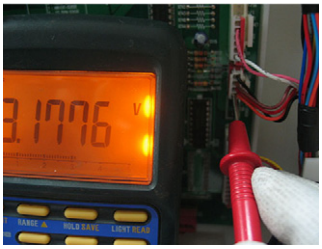


☞ Checking method of DC 2nd output voltage
REG1 output ; Regulator 7805 → same as C109 terminals.
DC 5V ± 0.5V

4-2-7. If compressor does not operate



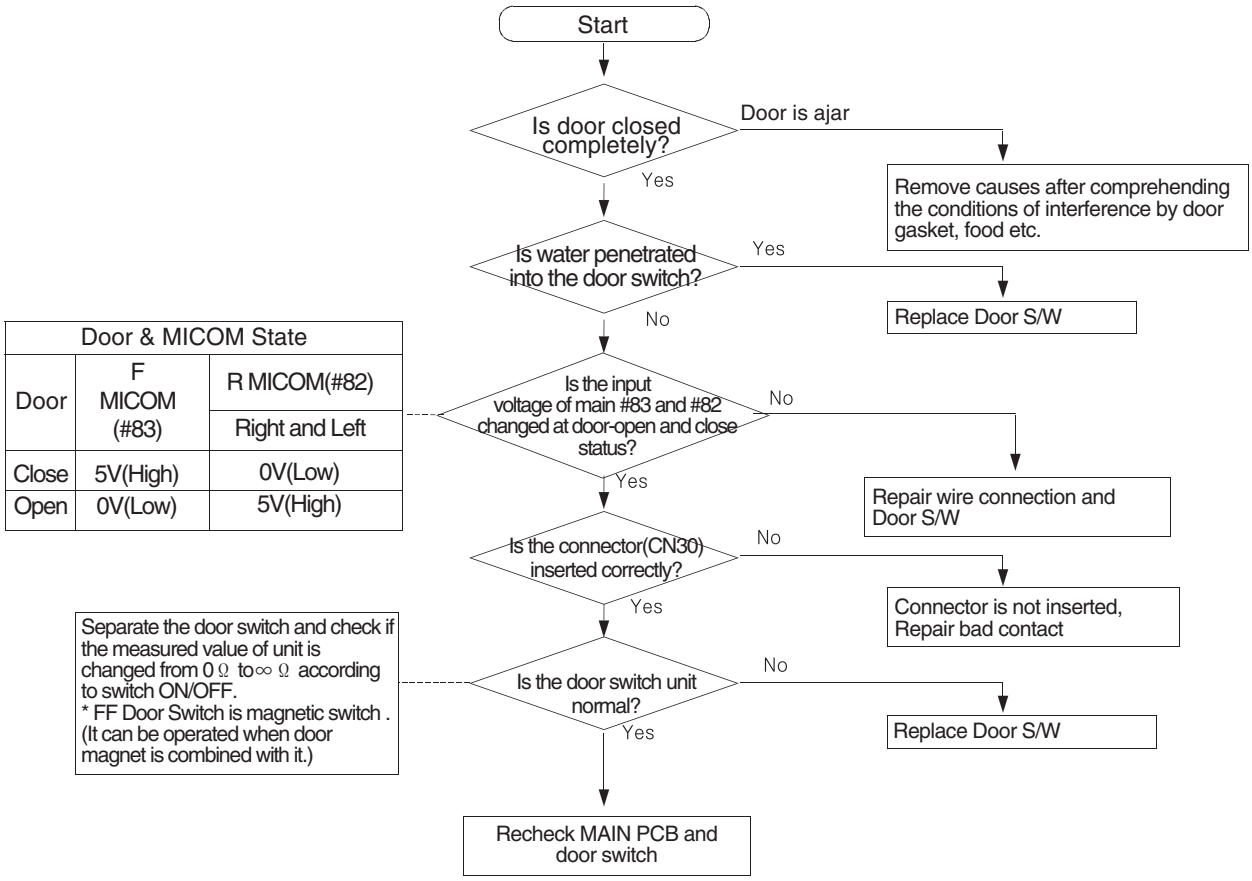
☞ Voltage checking method
Common Ground REG1 Heater Sink in PCB and 1) IC01 MICOM #4 ; Square wave voltage → 3V measured after MULTI TEST IC01 MICOM #4, COMP operates



Common PCB Ground REG1 Heater Sink

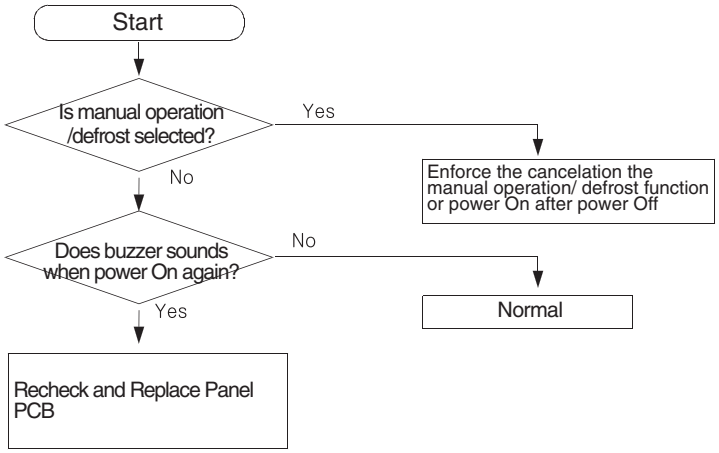
4-2-8. When alarm sounds continuously without stop(related with buzzer sound)

① If 'ding-dong' sounds continuously



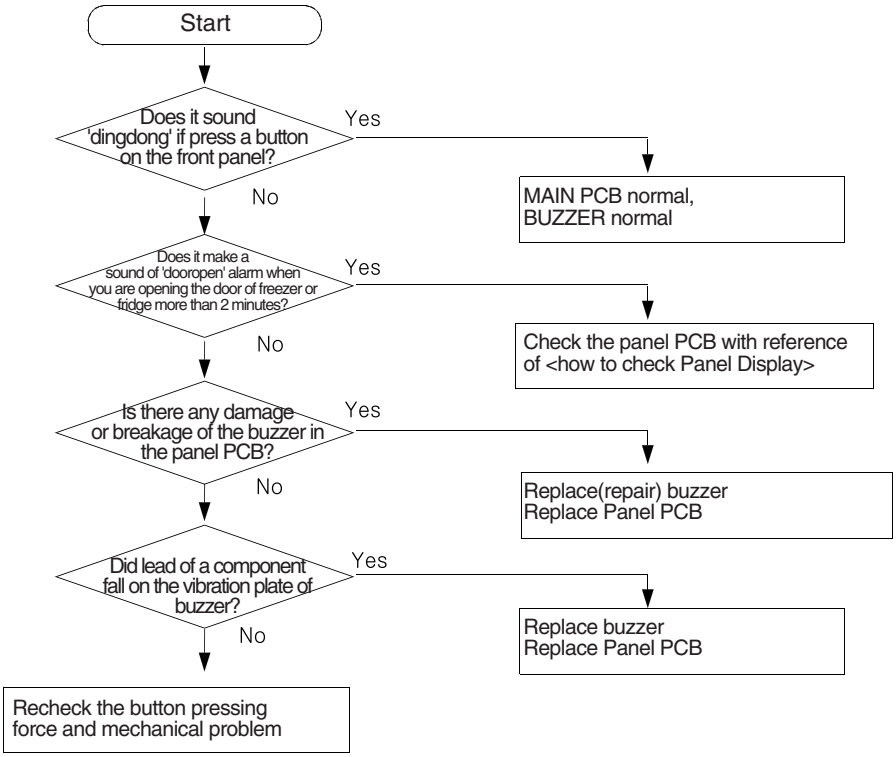
Door & MICOM State		
Door	F MICOM (#83)	R MICOM(#82)
		Right and Left
Close	5V(High)	0V(Low)
Open	0V(Low)	5V(High)

② If 'beep-beep' sounds continuously



③ If buzzer does not sound

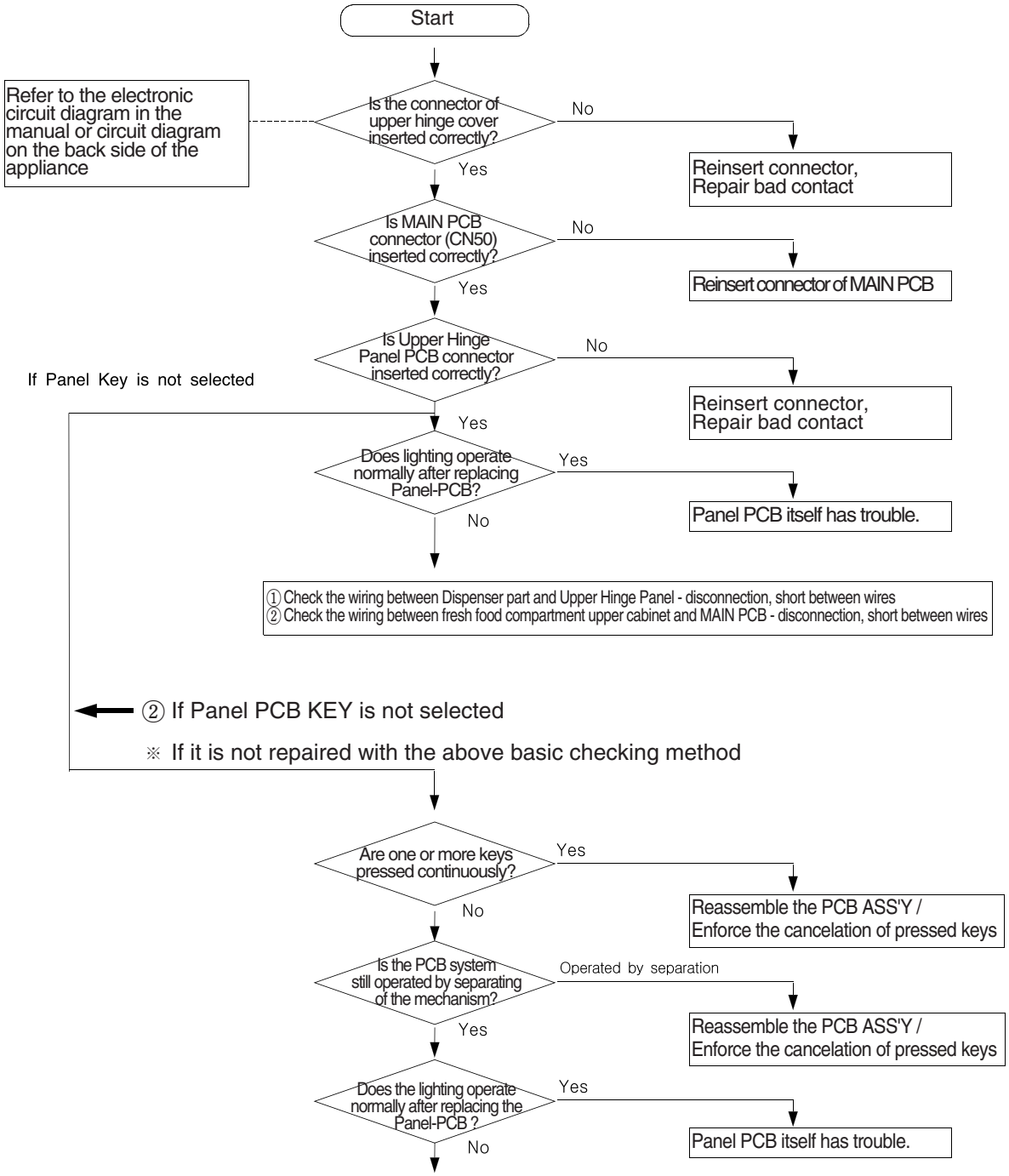
Buzzer is installed on the panel PCB in this model.
If buzzer does not sound even though the button is pressed, manual operation is started and door is opened, it should separate panel PCB and check the breakage of buzzer and bad soldering.
It is very hard to repair the panel PCB because it consists of SMD assemblies.
It is recommended to replace PCB assembly when the failure associated with panel is occurred except the minor error such as switch pressing error, surface peeling off and so on.



4-2-9. If Panel PCB does not work normally

① When lighting of Panel PCB is disabled or only some LED Lamp are disabled

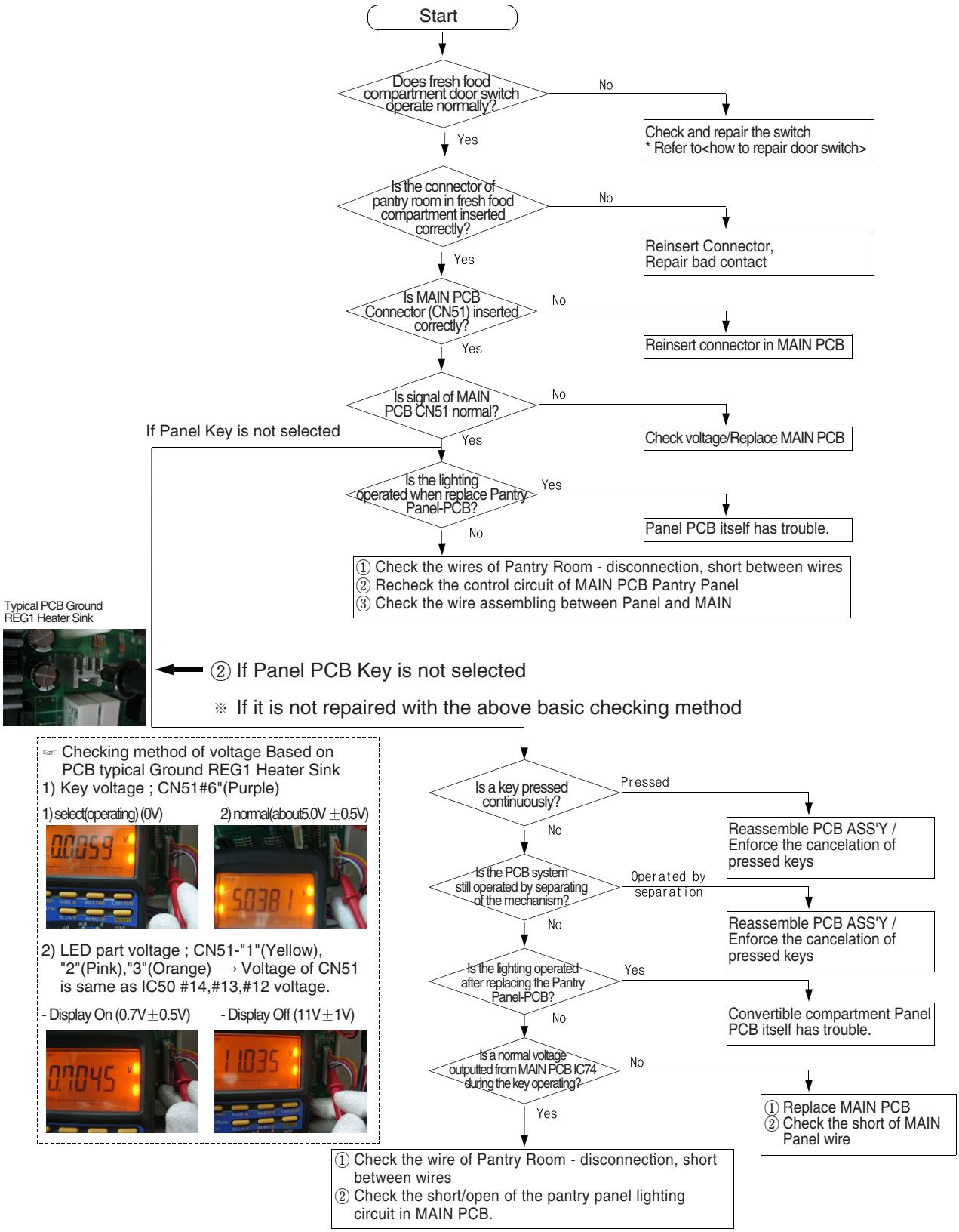
Be careful to repair because display of this model is installed in the MICOM of internal PCB.
It is recommended to replace PCB MAIN after checking except specified solder touch.



①Check the wiring betwwen Dispenser part and Uper Hinge Panel- disconnection, short between wires.
②Check the wiring of the fresh food compartment upper cabinet - disconnection, short between wires.
③Check the short/open of the panel communication and power supply circuit in MAIN PCB.

4-2-10. If Pantry Panel PCB is not working normally

You should check the display after door opening because the display of this model operates only when the fresh food compartment door is opened.

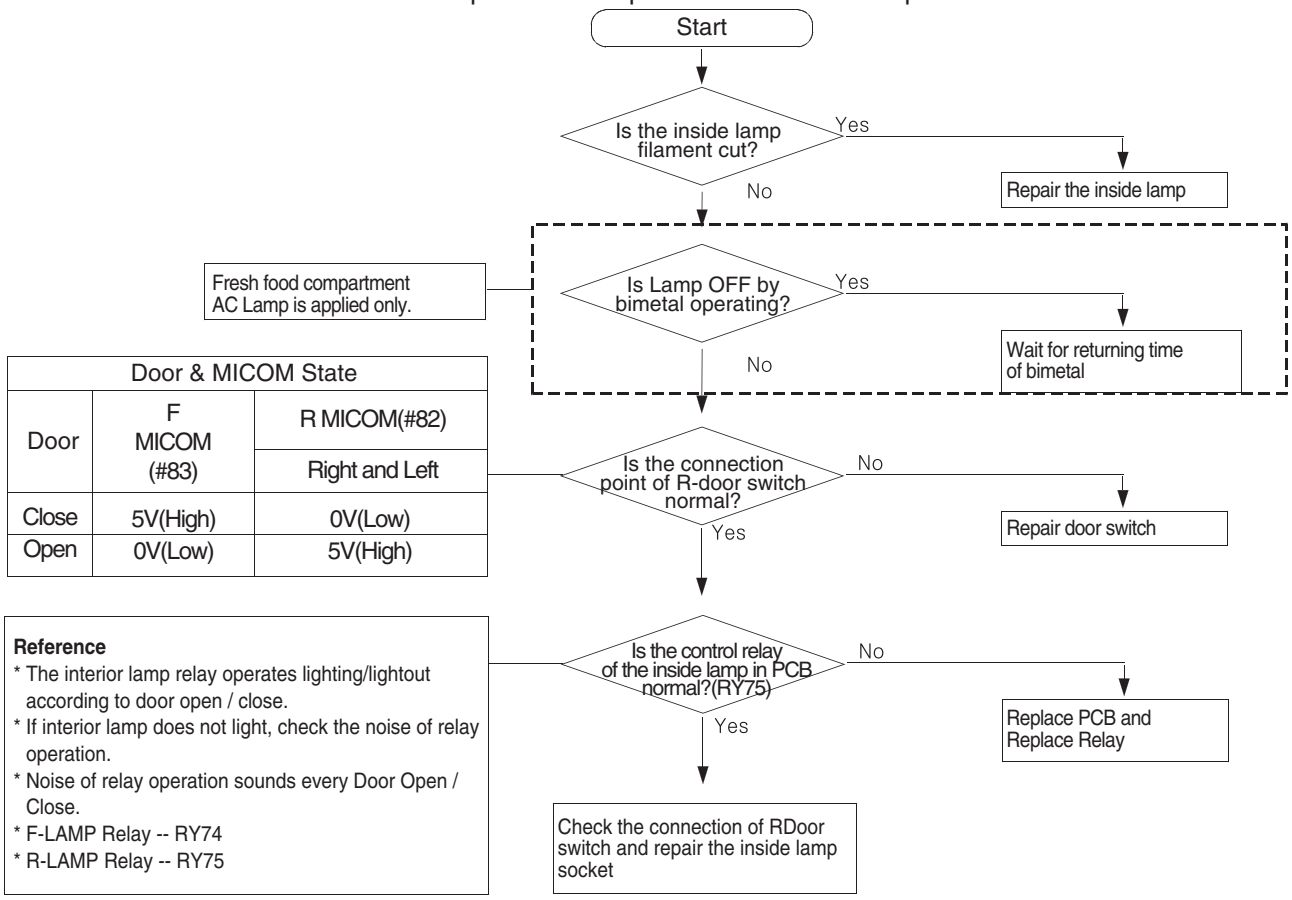


4-2-11. When refrigerator ROOM Lamp does not light up

1. When you replace the lamp of freezer, please power OFF to avoid an electric shock.
2. Please keep in mind you could get burnt by the excessive heating of an incandescent light bulb.
3. Bimetal is installed in the refrigerator LAMP. Check that if LAMP may be turned OFF by bimetal.

1) AC LAMP

※ We only explaine about Fresh Food compartment in this page.
Because it is possible to repair the other room lamps with the same method.



Door & MICOM State		
Door	F MICOM (#83)	R MICOM(#82)
		Right and Left
Close	5V(High)	0V(Low)
Open	0V(Low)	5V(High)

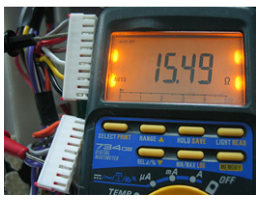
Reference
* The interior lamp relay operates lighting/lightout according to door open / close.
* If interior lamp does not light, check the noise of relay operation.
* Noise of relay operation sounds every Door Open / Close.
* F-LAMP Relay -- RY74
* R-LAMP Relay -- RY75

Reference
If the door is opened, the contact of door switch will be opened and MICOM will get applied 5V to finally sense Open.
If 5V has been sensed over two minutes afterwards, Door-Open alarm will sound 'Ding-Dong' for 10 seconds in a oneminute cycle. For that reason, if the door switch has failure, the refrigerator can make a "Ding-Dong" sound with oneminute cycle. Please note the step for its service.

☞ When measure lamp resistance to the Wire
→ Resistance can be changed by Lamp input voltage. (Actual measurement is below, it can be changed by performance)

Wire color changed from the following picture

☞ Fresh food compartment lamp
CN70#9(Red) ↔ CN71#1 (Blue) ; 10Ohm±5%
Lamp ; 60W + 60W



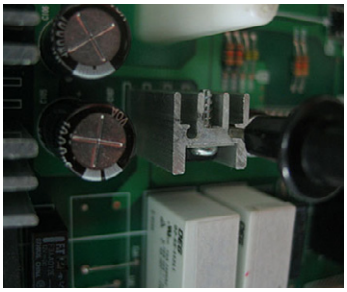
☞ Freezer compartment lamp
CN70#9(Red) ↔ CN71#3 (Gray) ; 15Ohm±5%
Lamp ; 60W

☞ Checking method of Door Switch voltage
- Measuring voltage of CN30#2(Purple), CN30#1(black) and REG1, HEAT SINK from PCB typical Ground part
→ See the R DOOR Switch at the following picture.

CLOSE

OPEN

Typical PCB Ground REG1 Heater Sink



1) LED LAMP

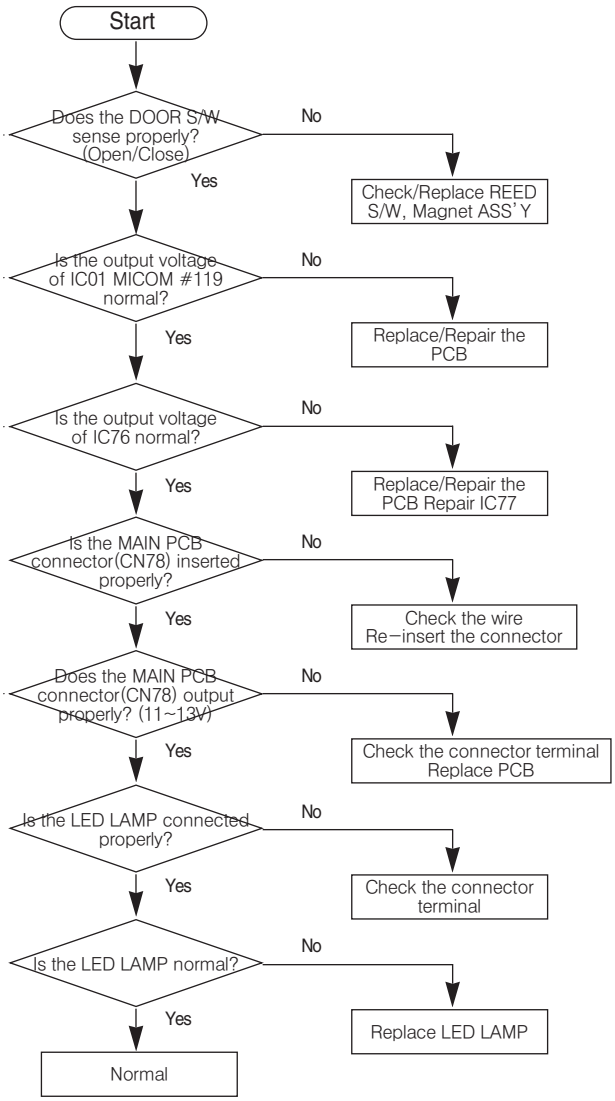
When controlling the regrigerator light with Regulator(12V) : LED LAMP
→ Applying only to the FF compartment.

* If the Vegetable Lamp does not work properly, check the FF compartment LED Lamp because it is connected with the FF compartment LED Lamp in parallel. Refer to the circuit diagram to repair.

Door & MICOM State	
Door	MICOM(#82)
	Right and Left
Close	0V(Low)
Open	5V(High)

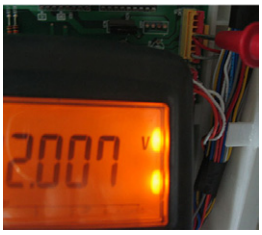
MICOM State	
Door(Right and Left)	MICOM (#119)
Close	0V (Low)
Open	5V (High)

IC76 State	
Micom	IC76 output
0V (Low)	0V (Low)
5V (High)	11~13V (High)

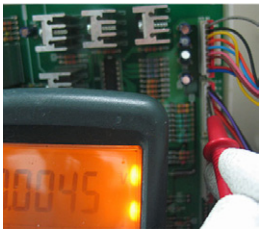


☞ Output Voltage Checking Method
– Common Ground REG1 Heater Sink in PCB and
1) Measuring IC76 voltage

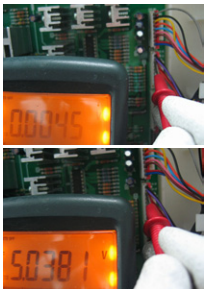
LED Lamp ON



LED Lamp OFF



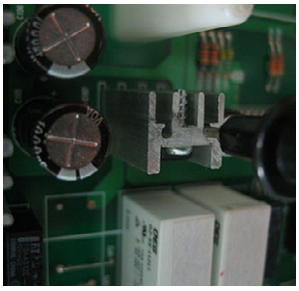
☞ Door Switch voltage Checking Method
- Measuring common Ground REG1 Heater Sink in PCB and CN30-"2"(Purple) (R Door Switch)



Close

Open

Typical PCB Ground REG1 Heater Sink



4-2-12. If ICE Water is not supplied

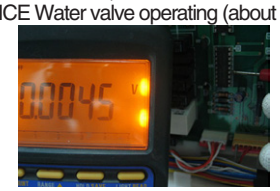
1. Please shut the water supplying prior to repair.
2. Power is applied to the one end of wires. Be careful when disassembling not to get an electric shock.

Typical PCB Ground REG1 Heater Sink

☞ Checking method of voltage Based on PCB typical Ground REG1 Heater Sink

1) Check the voltage of IC73#4(same voltage as IC01 #54)

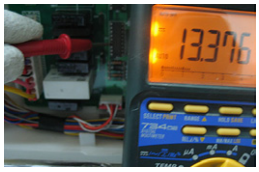
- ICE Water valve operating (about 5V±0.5V)



Based on PCB typical Ground REG1 Heater Sink

2) IC73 #15 voltage

- ICE Water valve Waiting (about 13V±0.8V)
- ICE Water valve operating (about 0.7V±0.5V)



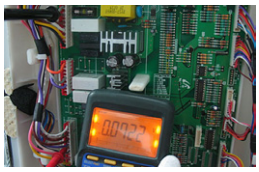
3) Check the voltage of ICE Water Valve operating(AC voltage)

=> For checking the Relay RY78 operating.

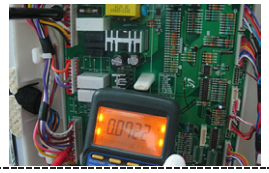
CN73 and CN74 combined and use same connector(13p)

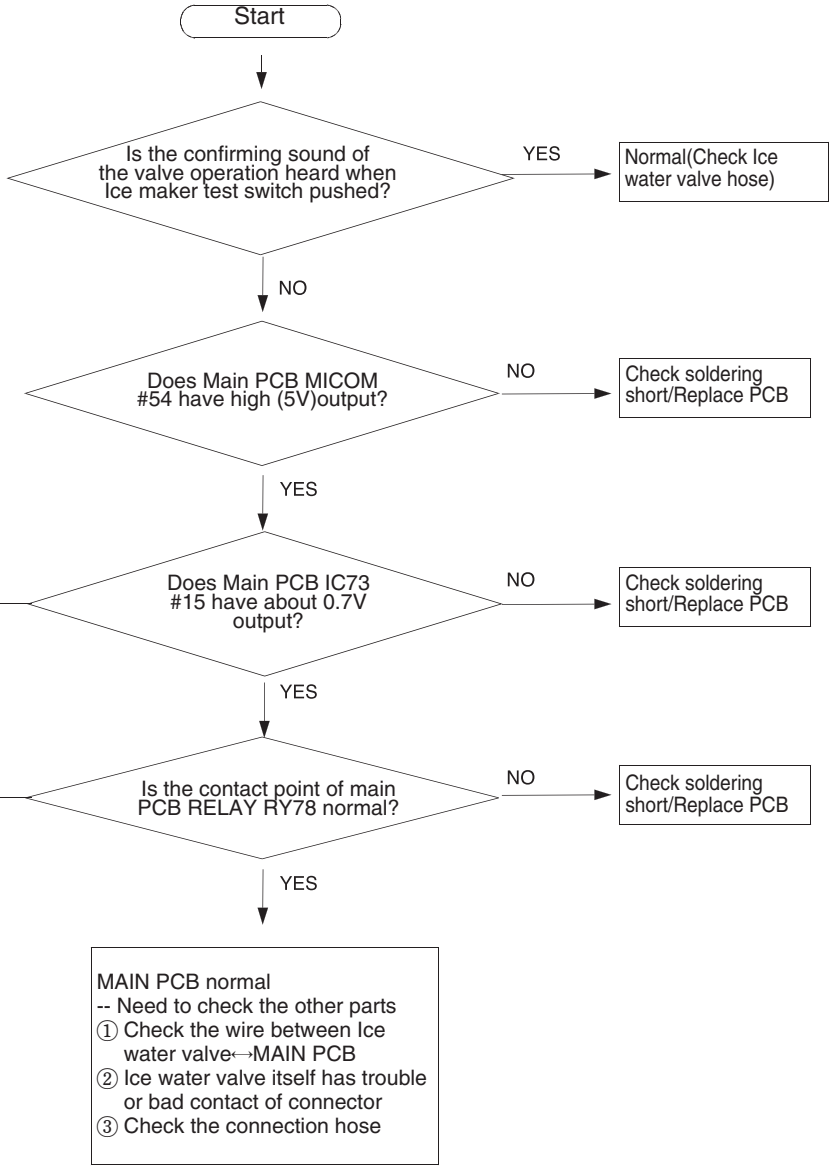
CN70#9(Red) ↔ 13P#7(Purple)

- ICE Water valve waiting (about AC 0V)



- ICE Water valve operating (about AC 115V ± 20%)





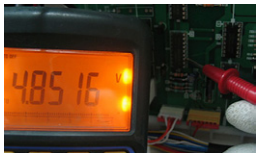
4-2-13. If Water is not supplied

1. Please shut the water supplying prior to repair.
2. Power is applied to the one end of wires. Be careful when disassembling not to get an electric shock.

☞ Checking method of Valve resistance (Must power off for checking)
Resistance can be changed by input voltage.
CN73 and CN74 combined and use same connector(13P)
CN70#9 (Red) ↔ 13P#5 (White-black)
- resistance value ; 404Ohm ± 7%)
** 0 Ω : Short trouble / ∞ Ω : Open trouble

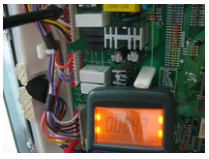
Typical PCB Ground REG1 Heater Sink

☞ Checking method of voltage
Based on PCB typical Ground REG1 Heater Sink
1) Check voltage of IC73#3 (same voltage as IC01#53)
- Water valve operating (about 5V±0.5V)

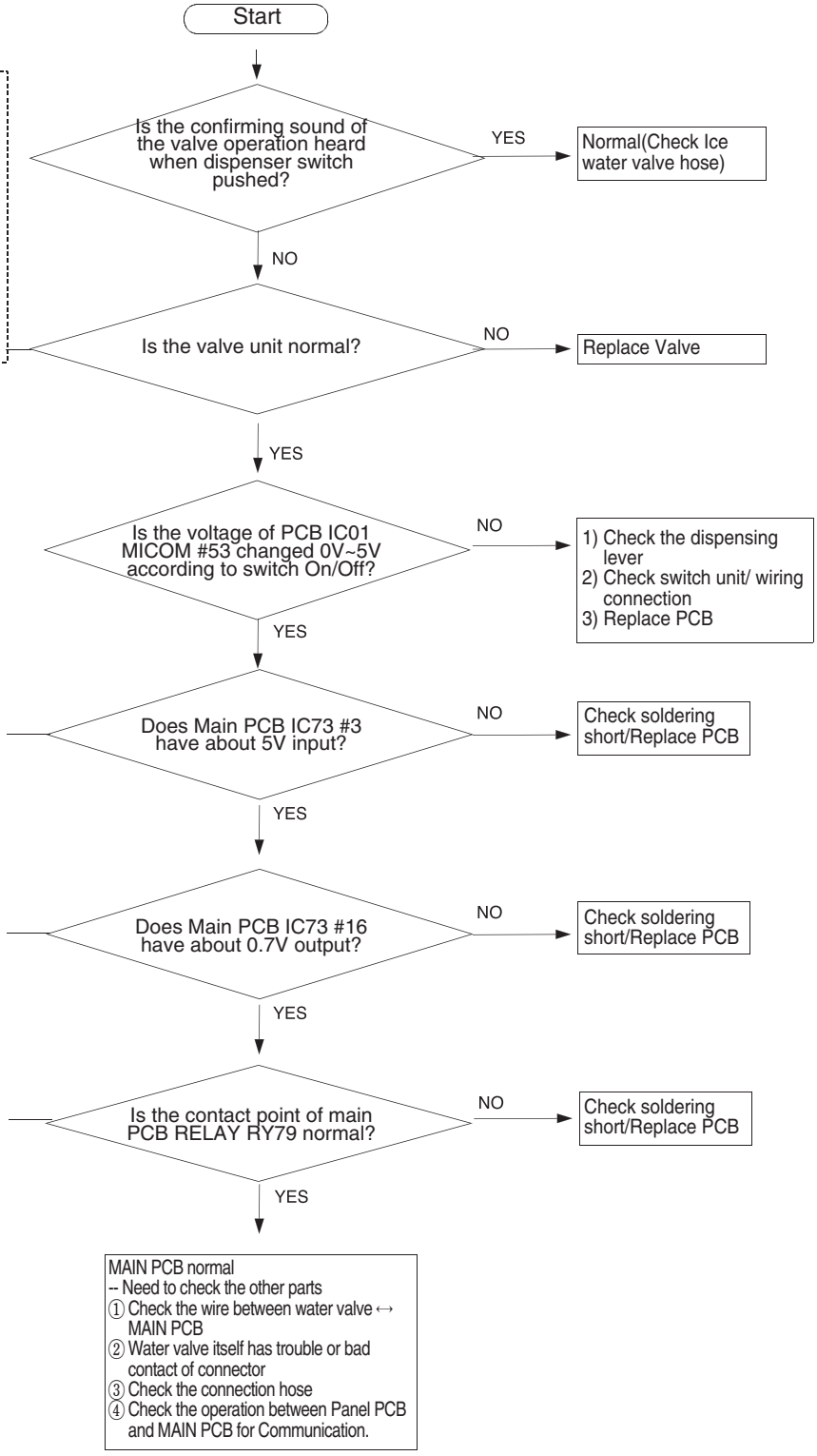


Based on PCB typical Ground REG1 Heater Sink
2) IC73 #16 voltage
- Water valve operating (about 0.7V±0.5V)

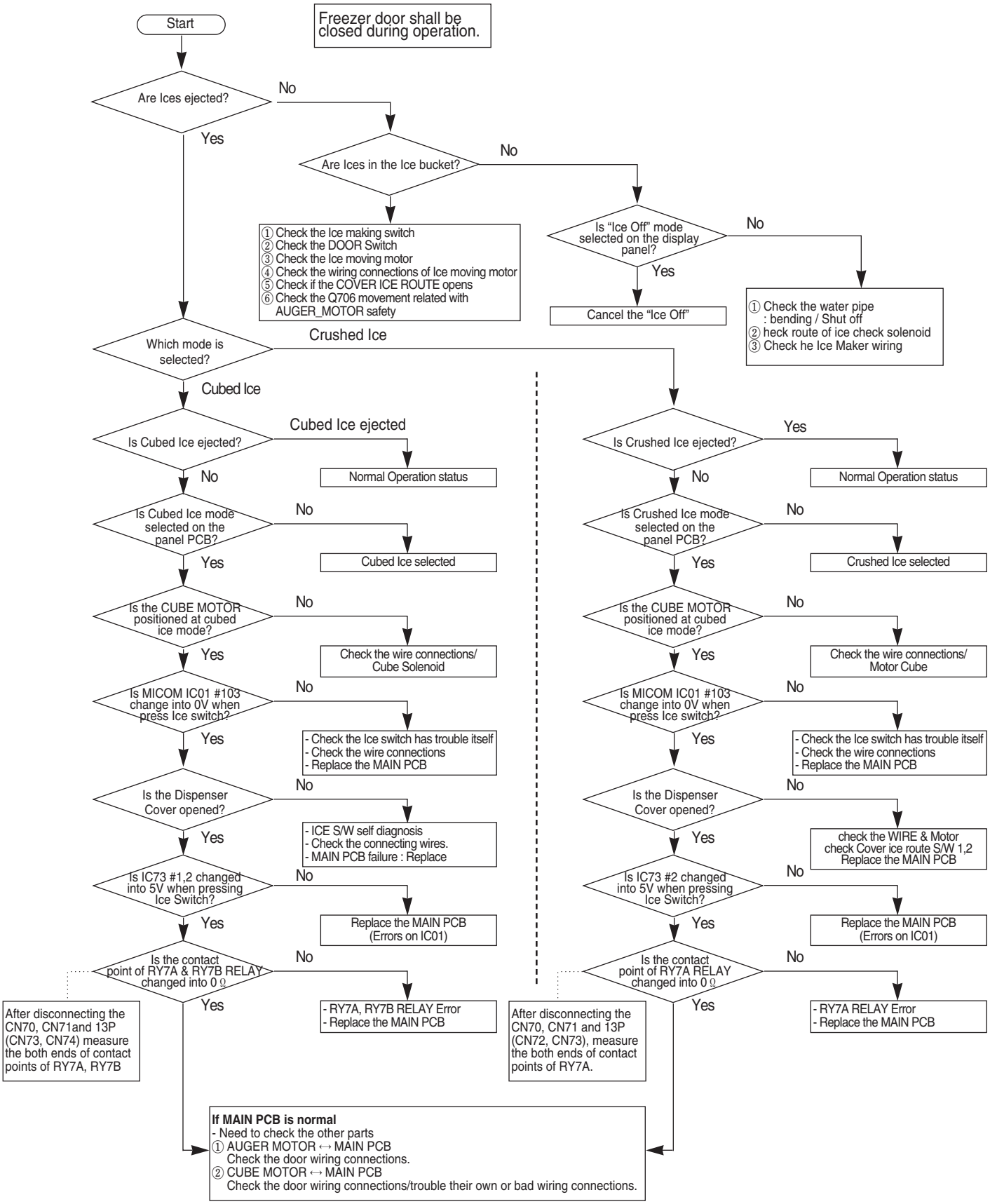
3) Check the voltage of Water Valve operating (AC voltage)
=> For checking the Relay RY79 operating.
CN73 and CN74 combined and use same connector(13P)
CN70#9(Red) ↔ 13P#5(White-black)
- ICE Water valve waiting (about AC 0V)



- ICE Water valve operating (about AC 110(220)V ± 20%)



4-2-14. If Cubed or Crushed Ice is not supplied



4-2-15. If Cover Ice Route Motor(Geard Motor) is not working normally

Caution
1. When replacing the Cover Ice Motor, pull out the plug to avoid an electric shock.
2. Be careful! When disassemble the Cover Ice Motor, spring can jumped out and may cause personal injury.
3. Motor will rotate continuously when the Motor Switch is not sensed.

☞ Checking Mehod of Cover Ice Route Motor Resistance
(Make sure to work after Power Off)
The Resistance is variable according to the input voltage.
CN73 and CN74 combined and use same connector(13P)
CN70#9(RED) ↔ 13P#9(Blue)
** 0 Ω : Short trouble / ∞ Ω : Open trouble

Start

Does GEARED MOTOR work properly?
- No → Replace the MOTOR
- Yes ↓

Is Cubed or Crushed Ice mode selected on the LED PANEL?
- No → Cubed or Crushed Ice is selected on the LED PANEL PCB
- Yes ↓

Is the DISPENSER switch selected?
- No → Select the DISPENSER switch
- Yes ↓

Does the wiring at the both sides of motor connected properly?
- No → Check the WIRE
- Yes ↓

Is the AC input voltage applied to the both ends of the motor?
- Yes → Check the MOTOR/Check any interference on MOTOR rotation
- No ↓

When the MOTOR rotates.

① CN73 and CN74 combined and use same connector(13P).
Check 13P-"9" Connector / Re-connect
② Check the short/open for the SSR75 of Cover Ice Motor on Main PCB.
③ Check the resistance of parallel Connector 13P-"9", CN70-"9".
(Definitely plug out prior to repair)

Is the sensing SWITCH connection normal?
- No → Check/Repair the Housing connector
- Yes ↓

Is the switch pressed area normal when motor rotates?
- No → Check/Repair the Motor Rotation pressing area
- Yes ↓

Are the voltage REG1 Heater Sink and CN50-"9", "10" normal?
- Yes → Normal
- No ↓

Operating Condition of Dispenser Open/Close
CN50 - Switch 1,2 Operating

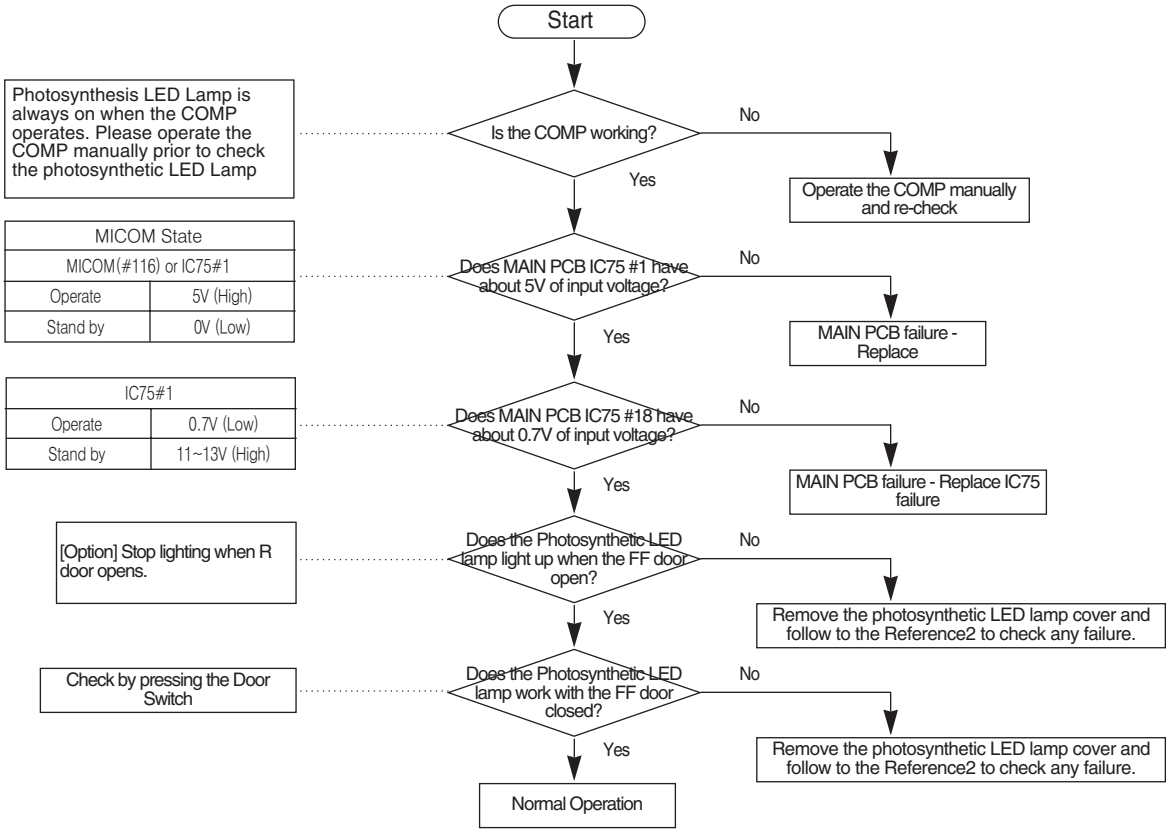
	Close	ing	Open
Ice Route Switch 1 CN50 - "9" (Purple)	0V	5V	0V
Ice Route Switch 2 CN50 - "10" (White)	0V	5V	0V

① Main PCB - Check the wire OPEN/SHORT between the Cover Ice Motor Rotation sensing switches.
② Check the Short of Cover Ice Motor Control Circuit SSR75 in the MAIN PCB.
③ Replace the MAIN PCB or the Dispenser Cover Motor.

4-2-16. If Photosynthetic LED Lamp does not work properly

Sears model Option

* Please check the Power prior to repair, even though DC power does not cause electric shock.
This lamp operates related to COMP operation, please check the COMP first.



Reference 2

Remove the Photosynthetic LED lamp cover from the rear wall of Veg. Pan and connect battery to check the lamp operation.

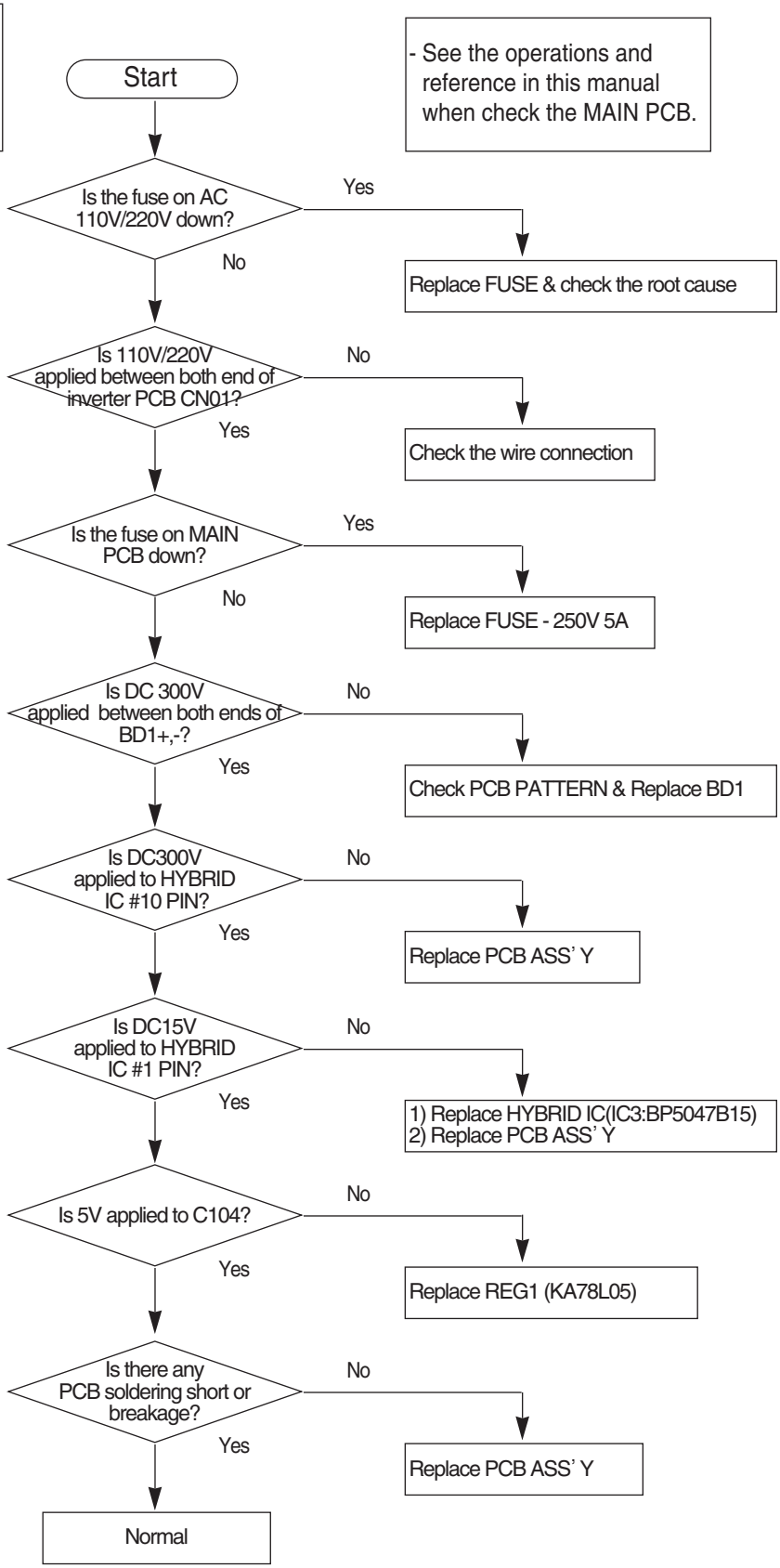
1) Contact + of 9V battery onto #1 and - of 9V battery onto #3. Check whether LED light up. When the battery contacting time is longer, LED can be broken. Please contact it momentarily and just check the lighting.
   - If LED doesn't light up, you are recommended to replace the whole photosynthetic LED ASS'Y.

4-2-17. If Inverter PCB Power is not supplied

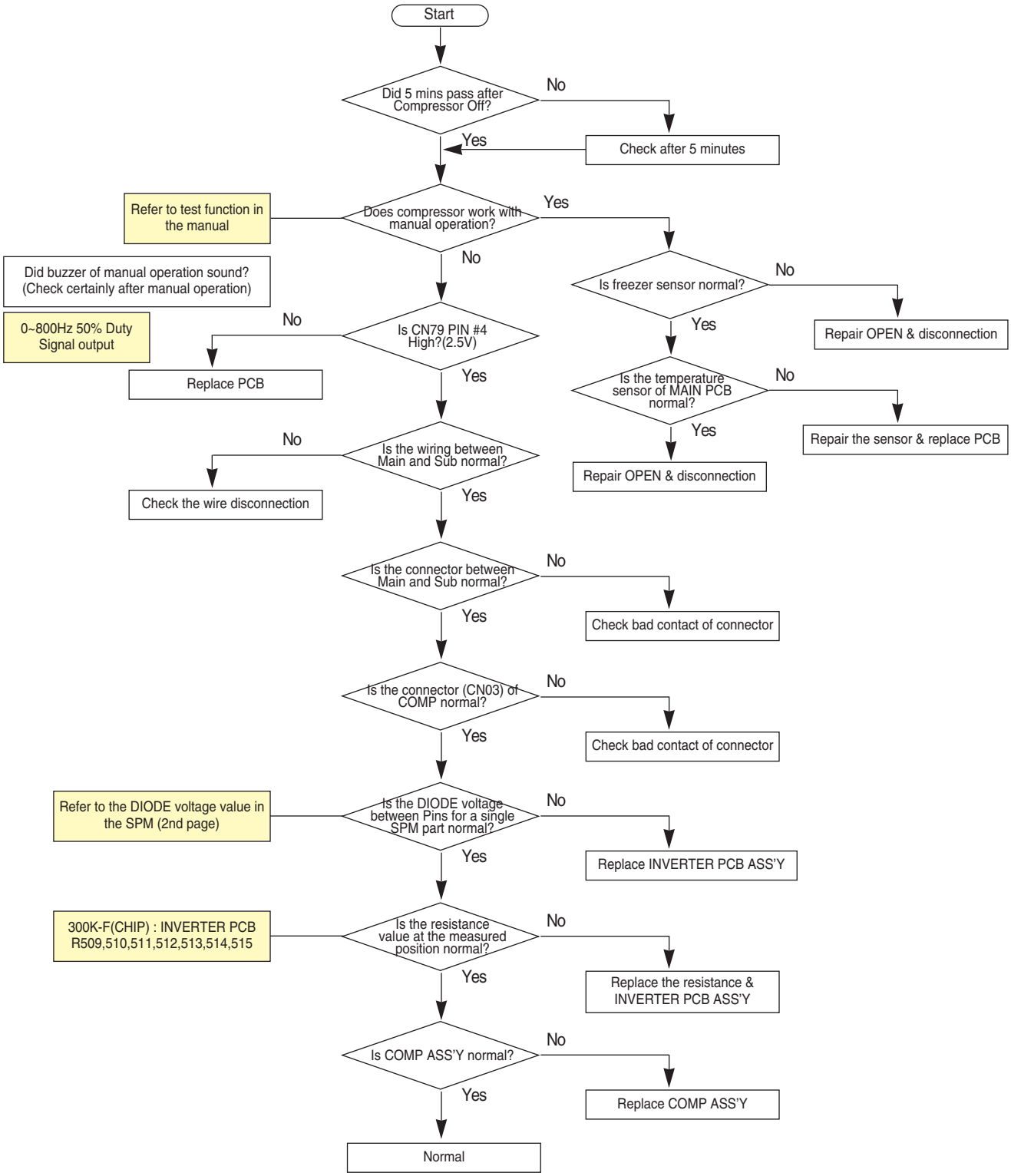
Caution

At the INVERTER PCB Power, AC 110V/220V power and over DC 300V of high-voltage are applied. Please take care of yourself when repair and measure.

- See the operations and reference in this manual when check the MAIN PCB.



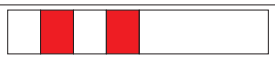
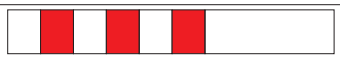
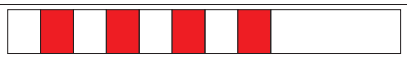
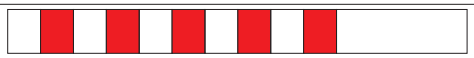
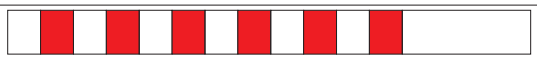
4-2-18. If compressor does not operate



4-2-19. LED blinking frequency depending on protecting functions

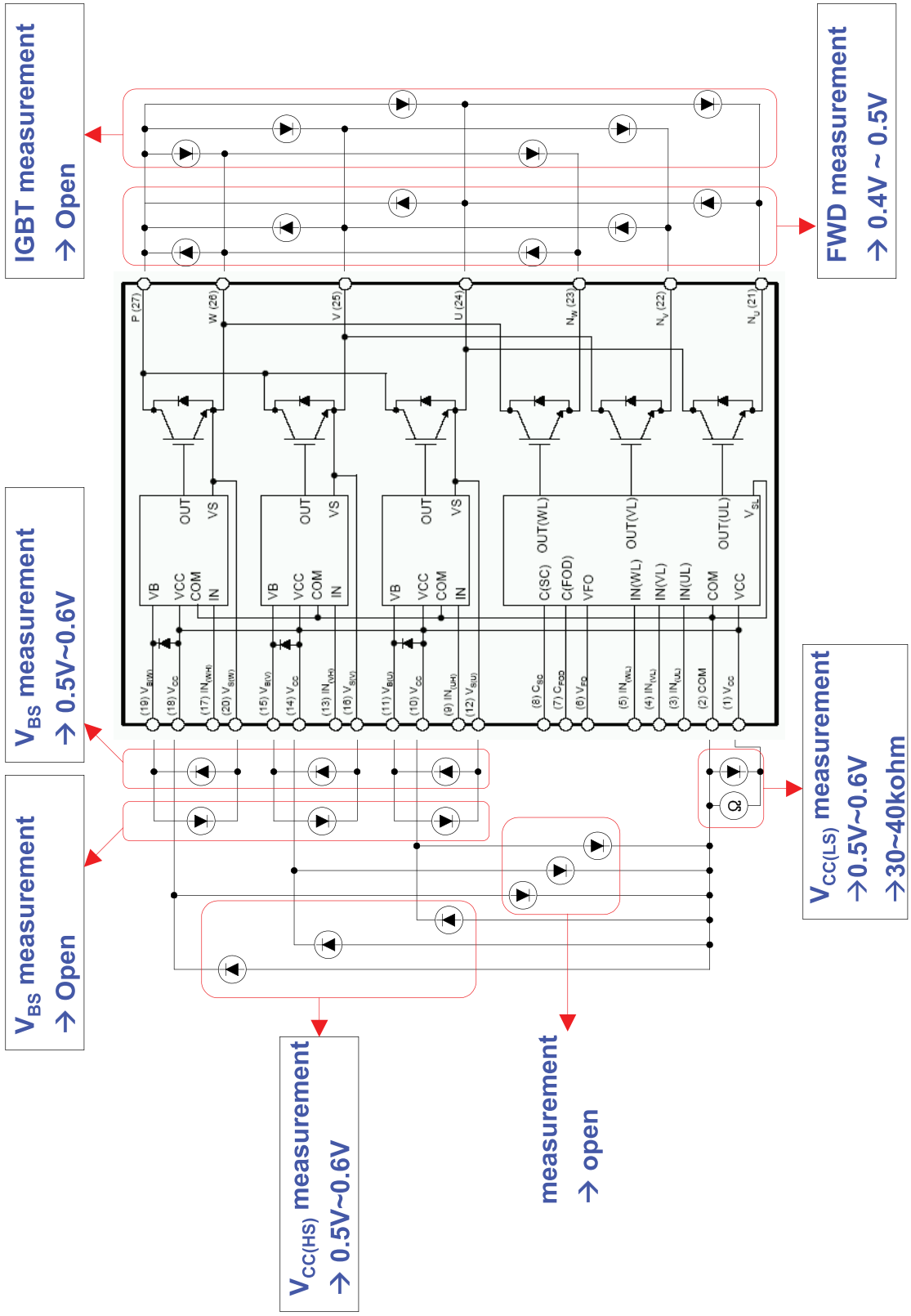
If Failure Condition is detected during compressor is operating, immediately stop Compressor operating and stand by 5 minutes. During this 5 minutes, RPM command signal is not available. It means, even if available RPM command signal is applied to the compressor, it does not work and keep standing by.

Blinking time is 1 second and dwell time is 2 seconds.

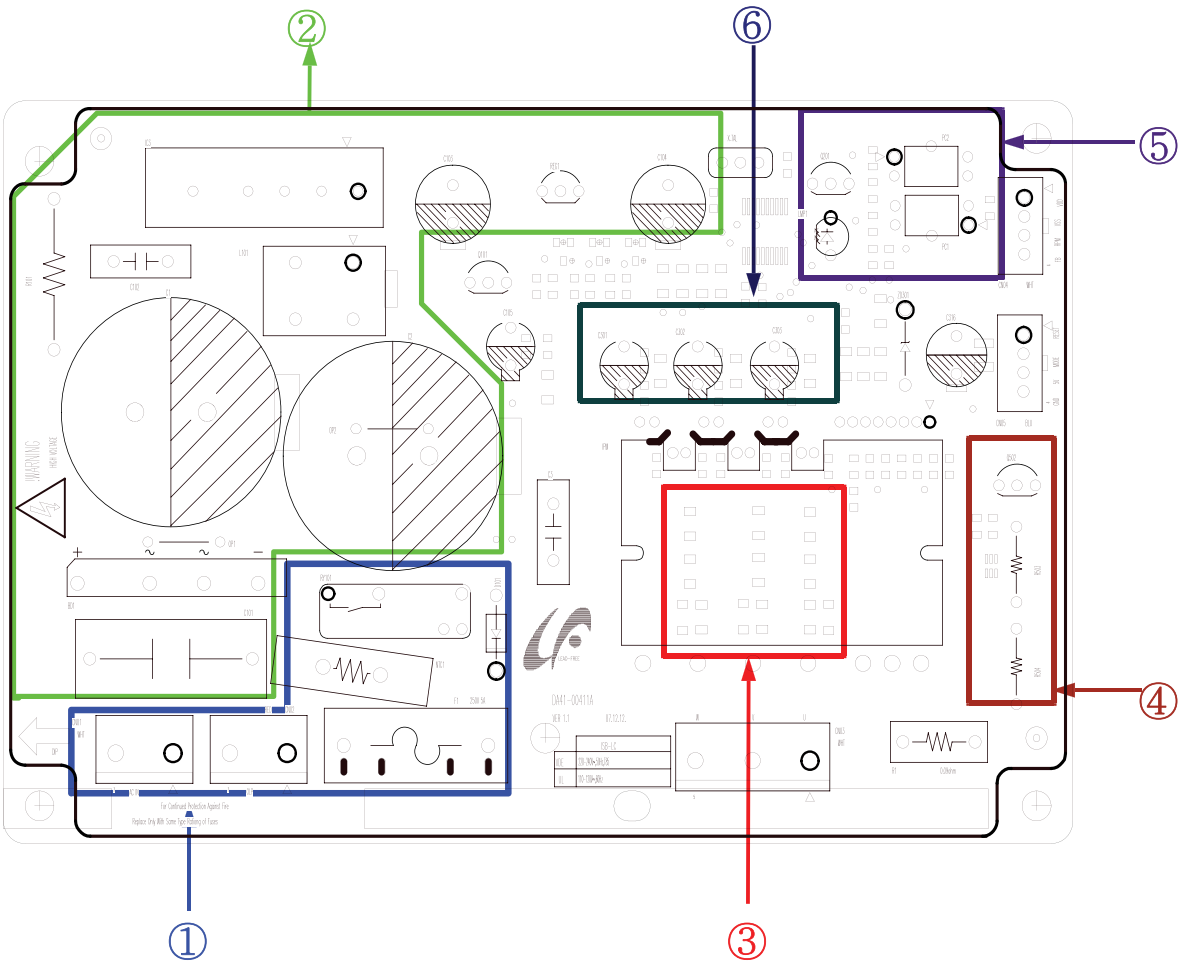
Protecting Functions	LED Blinking Frequency	Remarks
Starting Failure		
SPM Fault		
Detecting Positon Failure		
Motor locked		
Low Voltage		
Over Voltage		
Reserve		

LED blinking frequency depending on protecting functions

SPM Internal DIODE Voltage

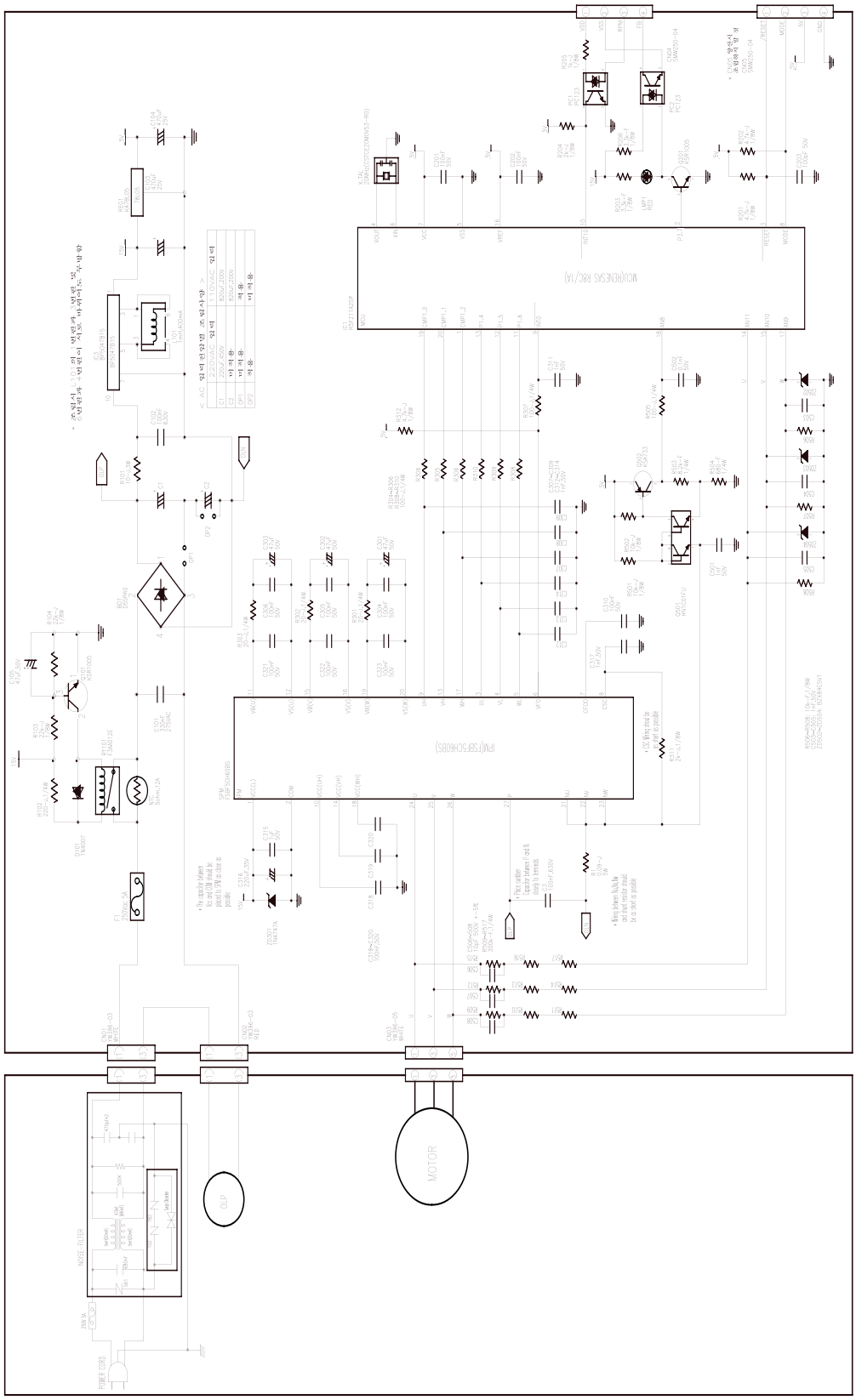


INVERTER CONTROLLER BOARD Connector Location

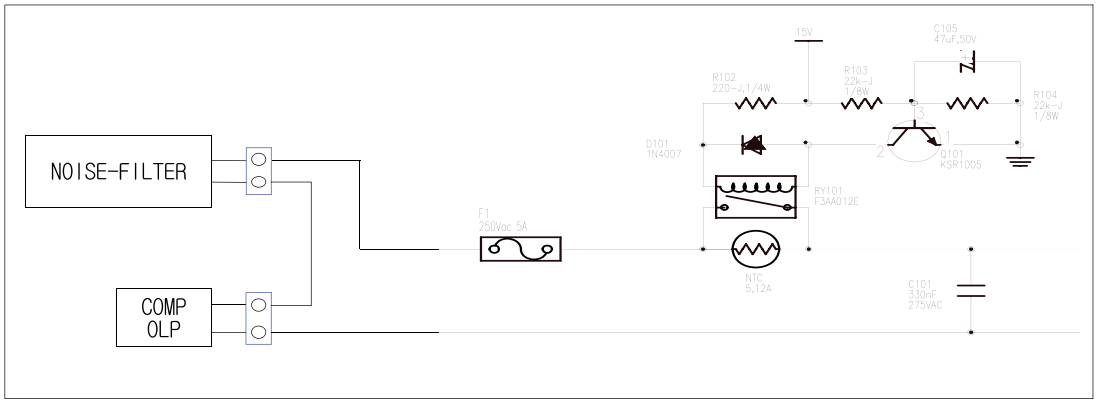


1. Inrush Current protecting area : It prevents an instant inrush of current generated in condenser when plug in.
2. PCB Power Source : Power source (HYBRID IC). It supplied DC15V and 5V to MICOM.
3. Location sensing resistance area : It senses motor location through the current detected.
4. Current sensing area : It senses the current from the SHUNT resistance and controls PWM DUTY.
5. COMP operating SIGNAL area : It receives COMP operating signal from MAIN PCB and conduct it.
6. BOOTSTRAP live part : Charging circuit that 1GBT of SPM can On/Off securely.

INVERTER PCB Circuit Diagram

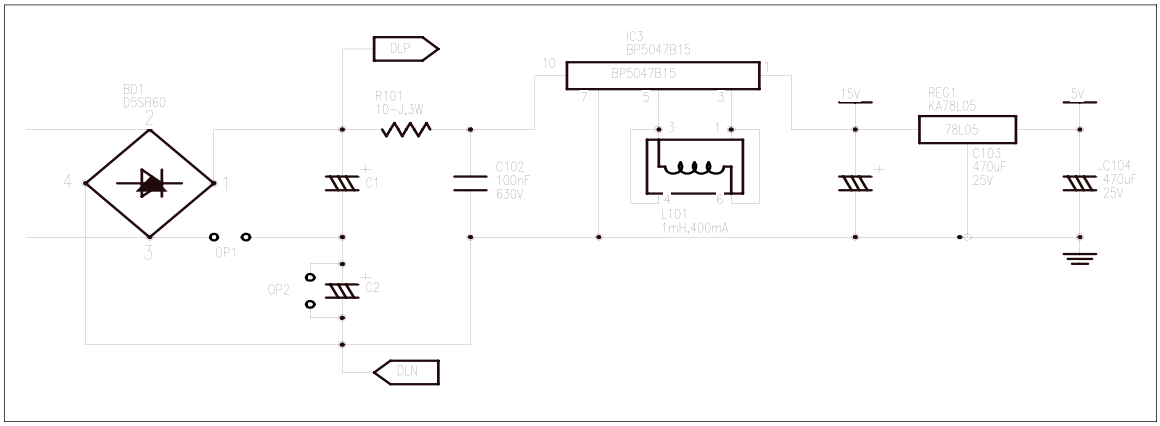


4-3-1. INRUSH CURRENT Protecting Circuit



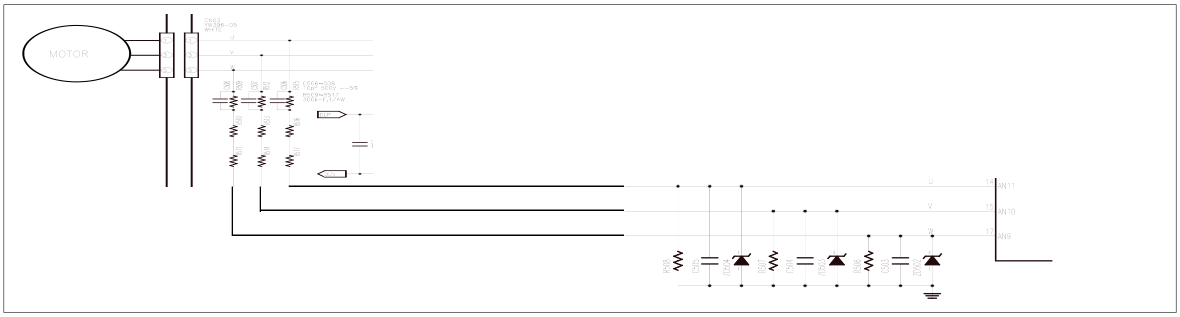
1) The Power Thermistor prevents an instant inrush of current generated in condenser(C1) when plug in, and Relay(K1) operates 0.1 second after plug in and the power is supplied by relay afterward.
2) The Fuse 1 is designed as 5A to prevent over current applied to Compressor, and Fuse 2 is designed as 1A to protect SMPS area and power in secondary part.

4-3-2. Power Source (HYBRID IC)



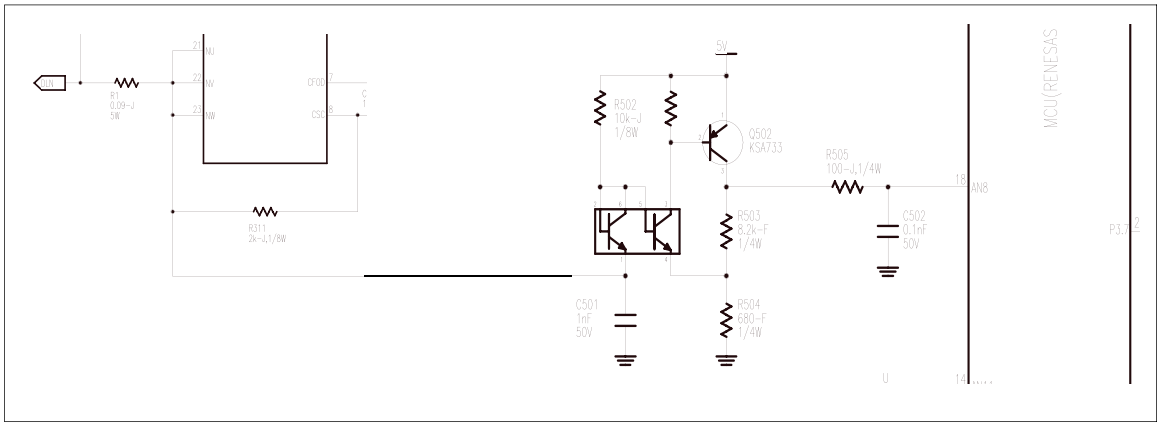
1) The power supplied by Noise-Filter is rectified through COMP OLP and the voltage of 300V/DC, rectified through DIODE, is applied in parallel to the SPM and SMPS area, a compressor operating driver.
2) The power source is the circuit which reduces 300V/DC to each 12V/DC and 15V/DC by Hybrid IC, and supplied to operate the MICOM for controlling COMP, and SPM.

4-3-3. Location Sensing Resistance Area



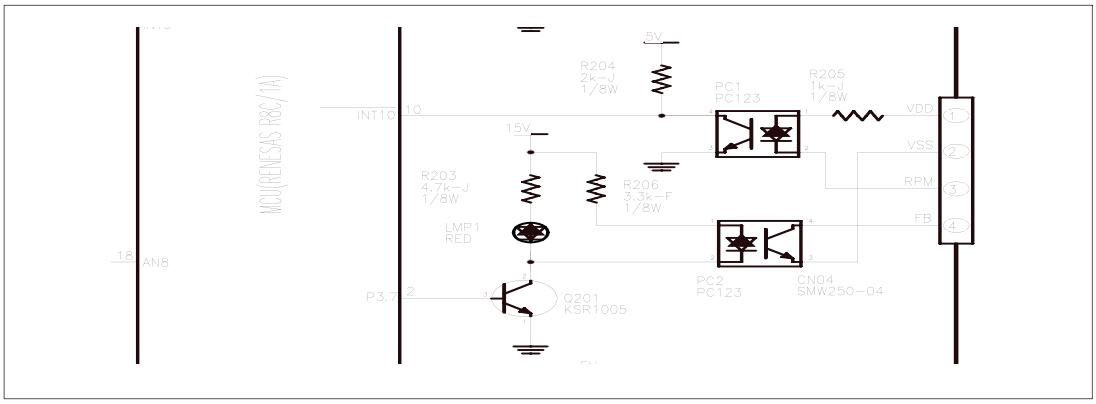
1) The circuit makes an AD conversion from MICOM for about 3.3V that divides the Motor Back EMF voltage (DC300V) by 3 of 300K resistance and 10K resistance.

4-3-4. Sensing Current Area



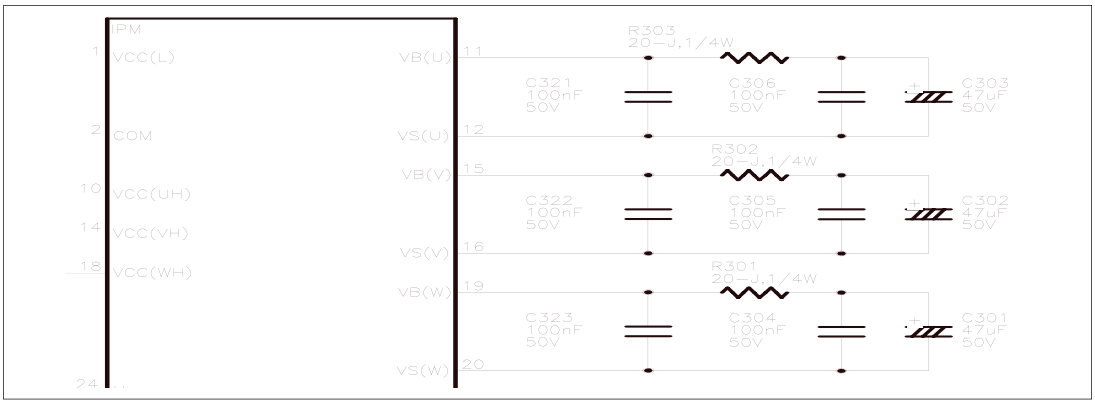
1) It is the circuit which senses the current from the SHUNT resistance and controls PWM DUTY and the converted value as voltage (about 0.5V) is applied to the MICOM PIN #18.

4-3-5. Comp Operating Signal Area



1) It is the circuit which receives COMP operating signal (200HZ ~ 400HZ) from Main PCB and controls the RPM of the Inverter Comp.

4-3-6. BOOTSTRAP Charging Area



1) It is the charging circuit that 1GBT of SPM can On/Off securely.
   This circuit stores the power voltage to operate High-Side Power Switch of SPM and is constituted as 3 Capacitors and charges the capacitors by turning the Low-Side Power Switch "On" just before starting the motor for a certain period of time (1000ms).

5. PCB DIAGRAM

5-1) PCB LAYOUT WITH PART POSITION · 104

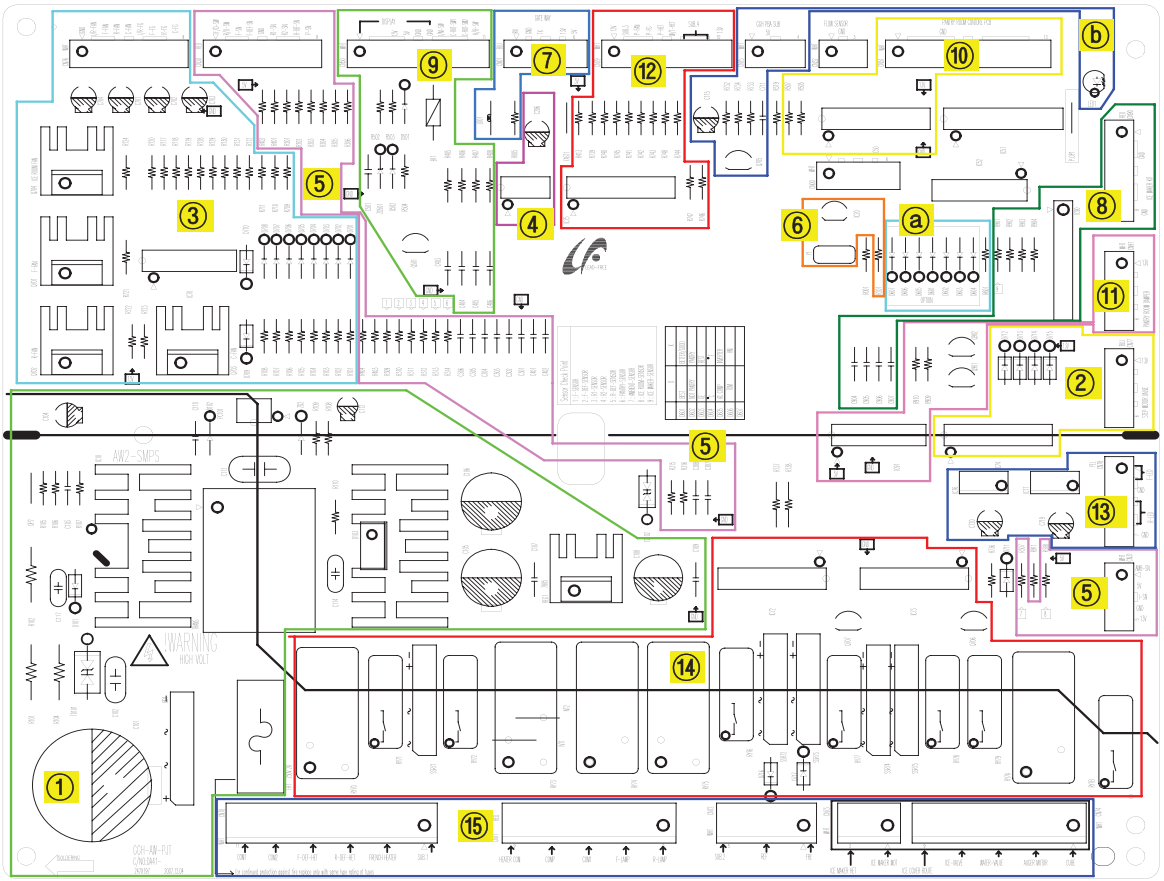
5-2) PCB LAYOUT WITH PART POSITION (SMPS BOARD) · 105

5-3) CONNECTOR LAYOUT WITH PART POSITION (MAIN BOARD) · · · · · · · · · · · · · · · · · · · 106

5-4) CONNECTOR LAYOUT WITH PART POSITION (SMPS BOARD) · · · · · · · · · · · · · · · · · · · 107

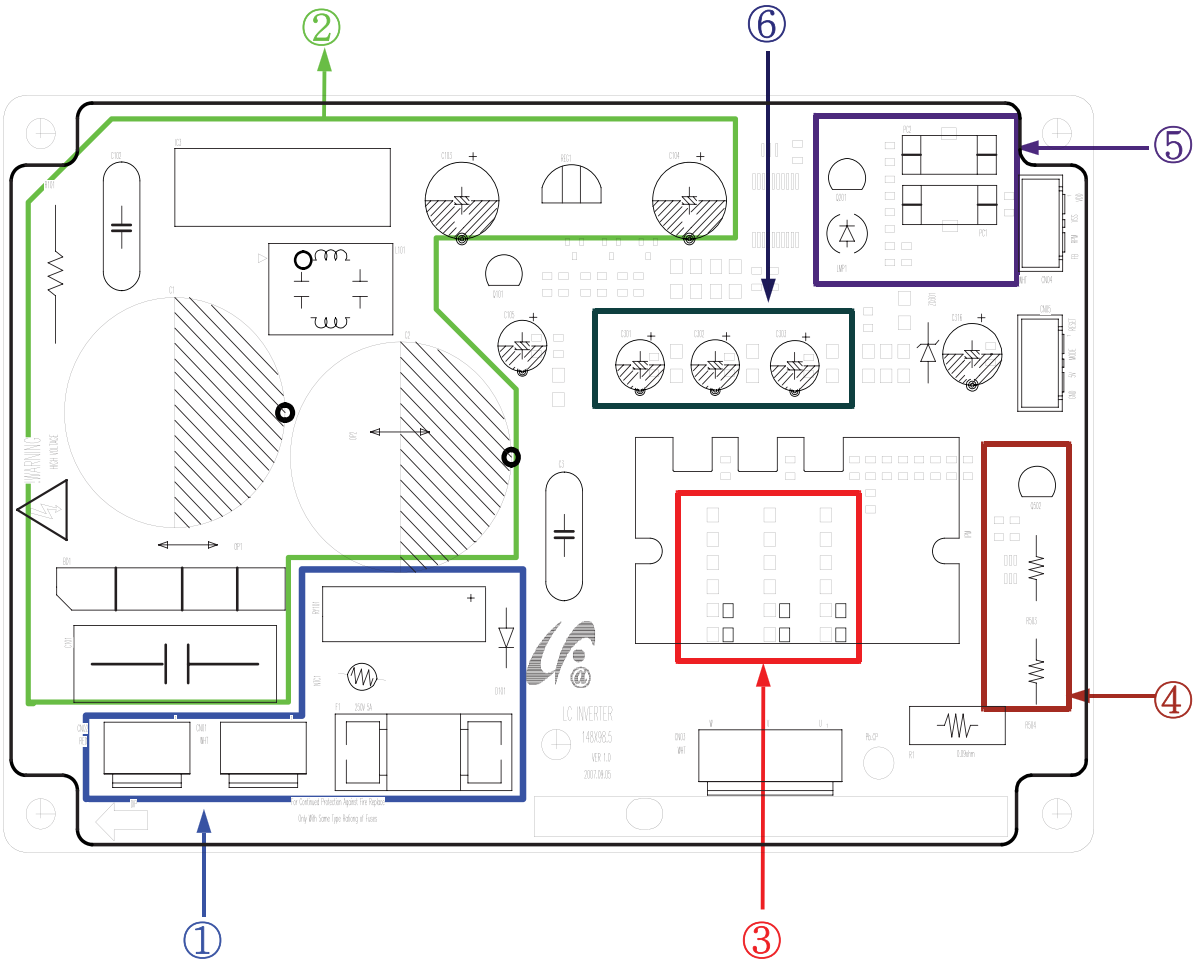
PCB DIAGRAM

5-1) PCB Layout with part position



1. DC13V, 5V, GND supplied from SMPS PCB
2. Circuit for controlling Step-Valve (3-Way Valve) * Option
3. FAN MOTOR control part : To supply the power from 8.3V ~ 12V according to the motor types. (F,R,C,ICE)
4. EEPROM : Save and record every kinds of data.
5. Transmit inputted signals from every sensor into MICOM after eliminate the noise.
6. Micom : control the regrigerator Ceramic resonator : generate the basic frequency of Micom operation.
   Reset IC : make Micom reset if input voltage of Micom is detected less than the specified voltage
7. PLC input/output
   - PLC (Power Line communication) * Option(PLC module is not inserted unless specified occasion)
8. Operate ICE-MAKER, supply power to MOTOR, and sense the variation of switch.
9. Main Micom ↔ Panel Micom serial communication circuit
   - Dispenser option input part (Water & Cover Ice route switch)
10. Pantry room display control part : display LED, detect KEY state.
11. Control Pantry room damper & Damper heater
12. Water Tank Heater Controls (also controls other options)
13. LED LAMP Control Circuit (F, R LAMP)
14. Relay parts that controls AC load and receives Micom operating signal through Sink IC.
15. Connector with AC load
    a. Diode option setting area
    b. Inverter COMP controlling signal

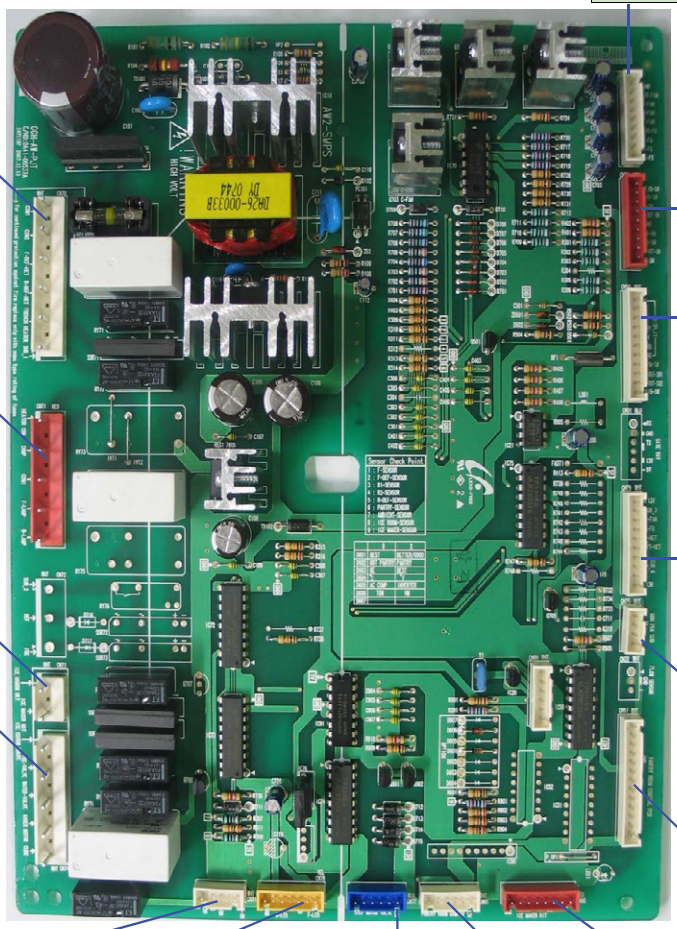
5-2) PCB Layout with part position (SMPS Board)



1. Inrush current protecting area : It prevents an instant inrush of current generated in condenser when plug in.
2. PCB Power Bus : power bus (Hybrid IC). It supplies DC15V and 5V to MICOM.
3. Location detecting resistance area : It detects motor location through the current detected.
4. Current detecting area : It detects the current from the SHUNT resistance and controls PWM DUTY.
5. COMP operating Signal area : It receives COMP operating signal from Main PCB and conduct it.
6. BOOTSTRAP live part : Charging circuit that 1GBT of SPM can On/Off securely.

5-3) Connector Layout with part position (Main Board)

5-3-1. RFG29*AA**



CN76 - BLDC Motor
① : GND
② : Ice Room-FAN operation signal
③ : F-FAN operation signal
④ : R-FAN operation signal
⑤ : C-FAN operation signal
⑥ : Ice Room-FAN signal input volt
⑦ : F-FAN signal input volt
⑧ : R-FAN signal input volt
⑨ : C-FAN signal input volt

CN30 - Sensor & Switch
① : F-Door Switch
② : R-Door Switch
③ : F-Sensor
④ : F-DEF-Sensor
⑤ : GND
⑥ : R-Sensor
⑦ : OPEN
⑧ : R-DEF-Sensor
⑨ : Pantry-Sensor

CN50
① : LCD Panel SO
② : LCD Panel SI
③ : LCD Panel /SCK
④ : +13V
⑤ : +5V
⑥ : GND
⑦ : GND
⑧ : Ice/Water Switch
⑨ : Ice Route Switch 1
⑩ : Ice Route Switch 2
⑪ : OPEN

CN79
①~⑤ : OPEN
⑥ : Water Tank Heater
⑦~⑨ : OPEN
⑩ : +13V

CN75
① : OPEN
② : +5V
③ : OPEN
④ : COMP. SIGNAL

CN51
①~③ : Pantry room LED Driver
④ : OPEN
⑤ : GND
⑥ : Display Switch input
⑦ : +13V
⑧~⑬ : OPEN

CN70 - AC LOAD
⑪ : COMMON1 LINE(N)
⑨ : COMMON2 LINE(L)
⑦ : F-DEF-HEATER
⑤ : R-DEF-HEATER
③ : FRENCH HEATER
① : SUB_1 DISPENSER HEATER

CN71 - AC LOAD
⑨ : HEATER COMMON
⑦ : OPEN
⑤ : COMMON1 LINE(N)
③ : F-LAMP
① : R-LAMP(OPTION)

CN73 - AC LOAD
③ : ICE MAKER HEATER
① : ICE MAKER MOTOR

CN74 - AC LOAD
⑨ : ICE COVER ROUTE
⑦ : ICE WATER SOLENOIDE VALVE
⑤ : WATER SOLENOIDE VALVE
③ : AUGER MOTOR
① : CUBE SOLENOIDE MOTOR

CN31 - Sensor
① : Ambient
② : +5V(Ice Maker
③ : Ice Room
④ : GND
⑤ : OPEN

CN78 - Lamp(LED)
①~③ : OPEN
④ : R LAMP(LED)
⑤ : R VEG. LAMP (LED)
⑥ : OPEN
⑦ : GND

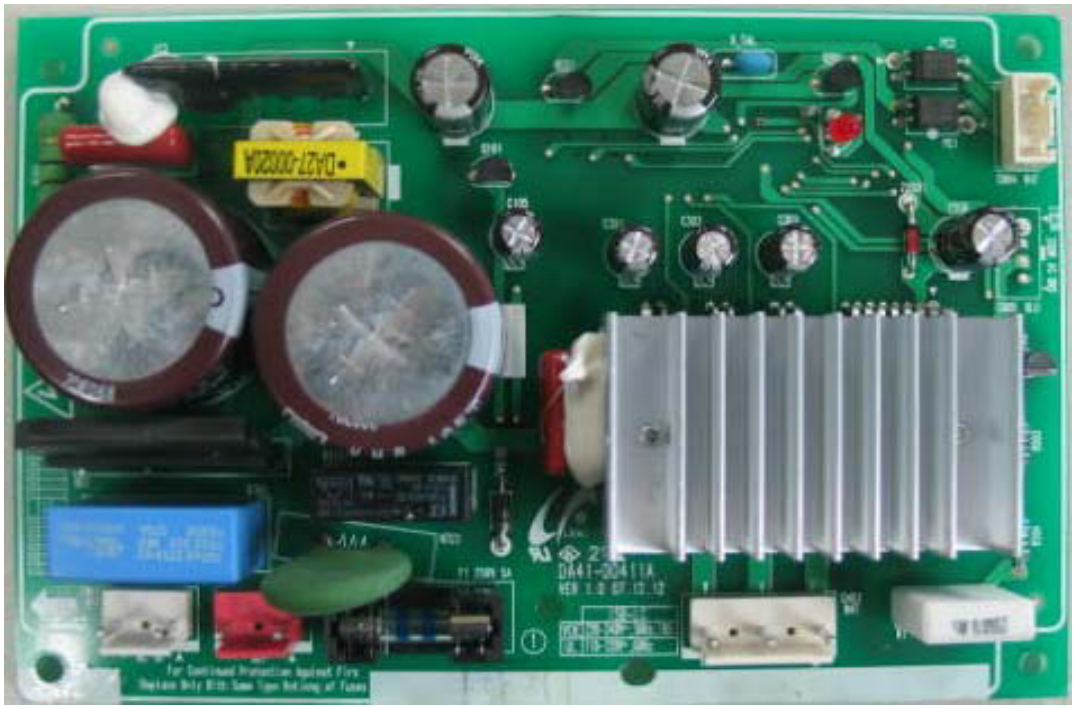
CN77 - STEP VALVE
① : +13V
② : STEP VALVE A
③ : STEP VALVE /A
④ : STEP VALVE B
⑤ : STEP VALVE /B
⑥ : OPEN

CN91 Pantry Room
①~② : Damper Heater
③ : Damper Motor /A
④ : Damper Motor A
⑤ : Damper Motor /B
⑥ : Damper Motor B

CN90 - Ice Maker
①~ ② : OPEN
③ : OPEN
④ : Sensor
⑤ : Test Switch
⑥ : Full Switch
⑦ : Horizontal Switch
⑧ : GND

5-4) Connector Layout with part position (SMPS Board)

5-4-1. RFG29*AA**



①VDD
②VSS
③RPM
④FB

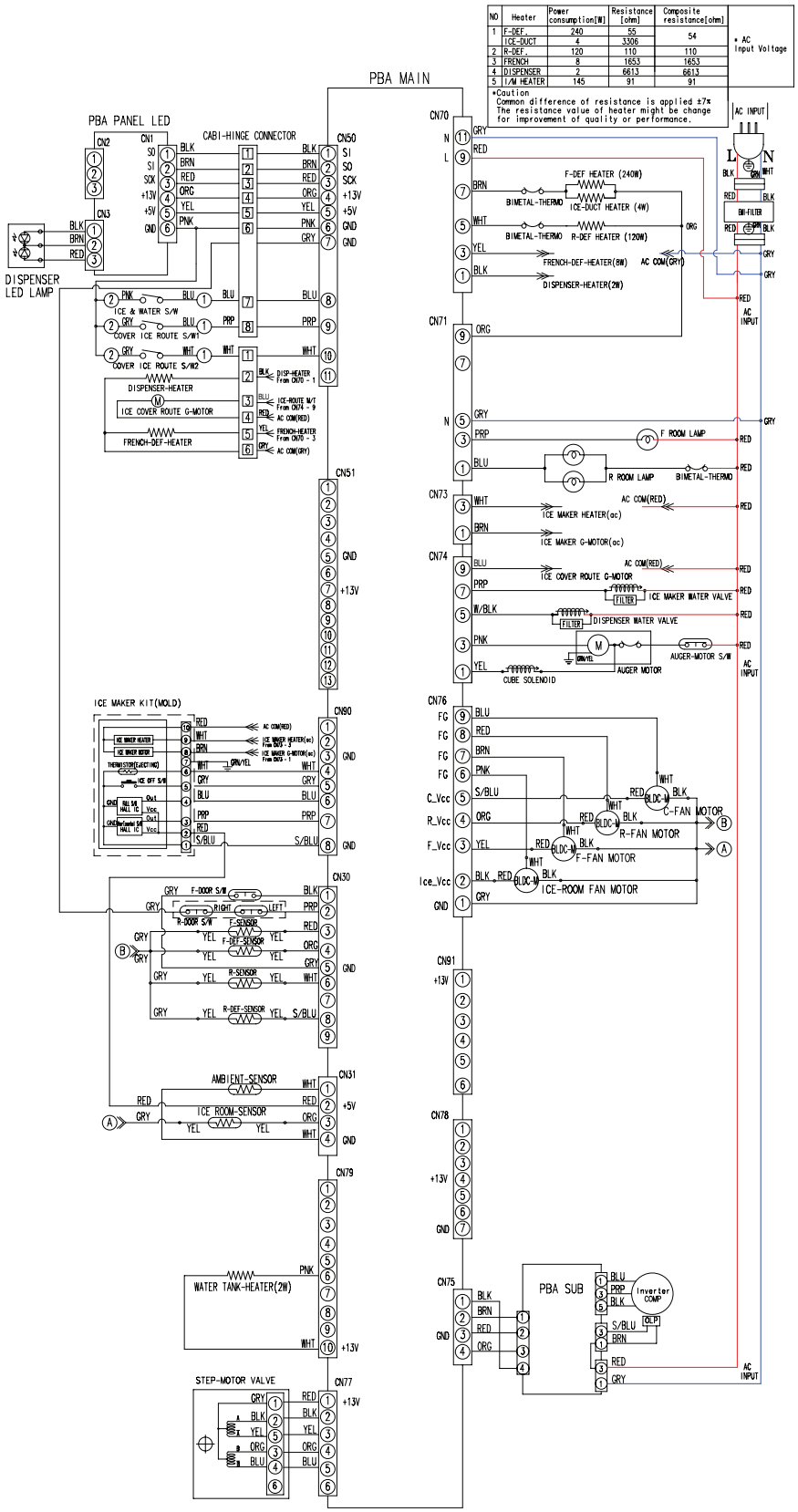
POWER(110V)

OLP

①U ②V ③W

7. WIRING DIAGRAM

7-1) Model : RFG295AA**[BETTER]



NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF.	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.

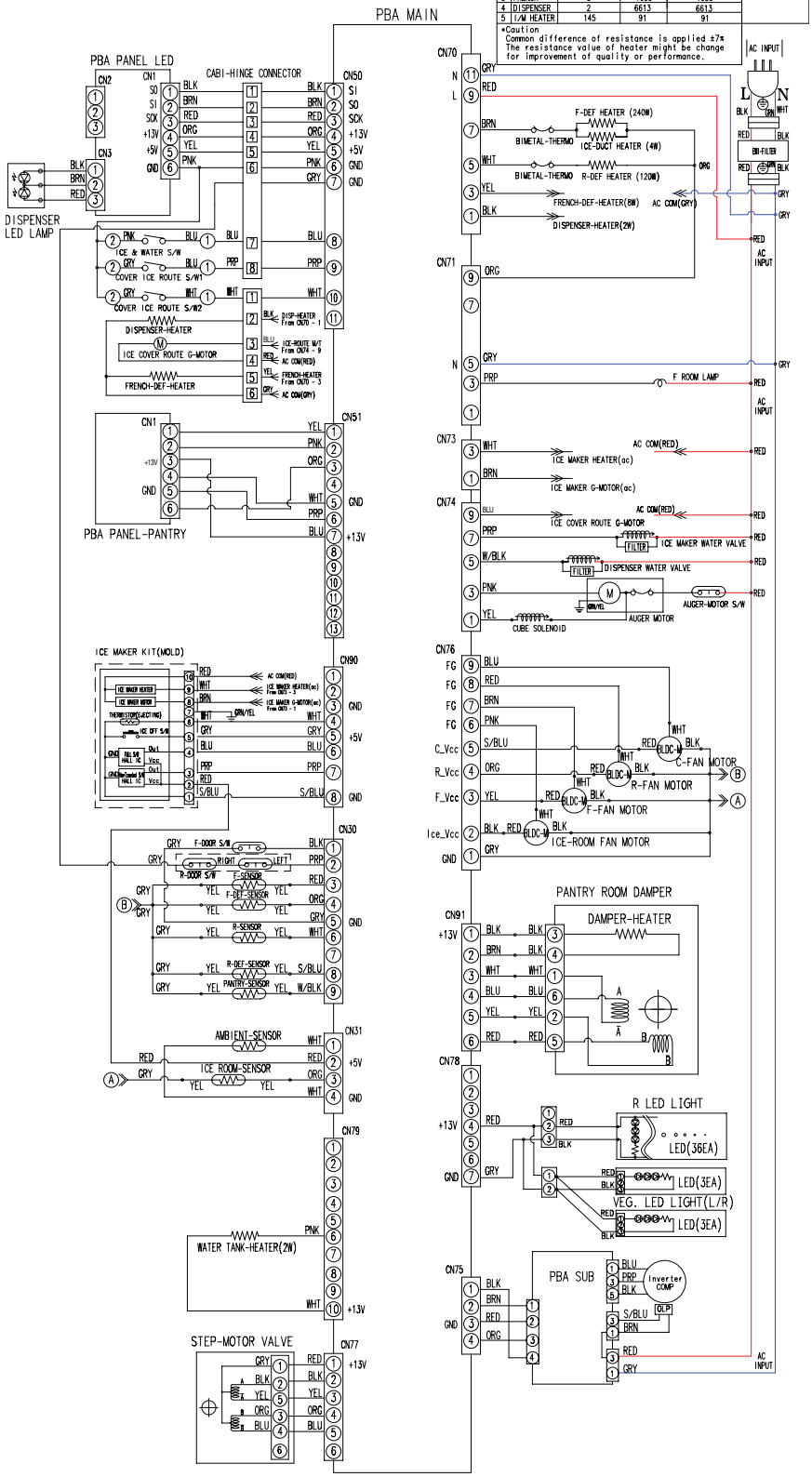
* AC Input Voltage

6-2) Model : RFG297AA**[BEST]

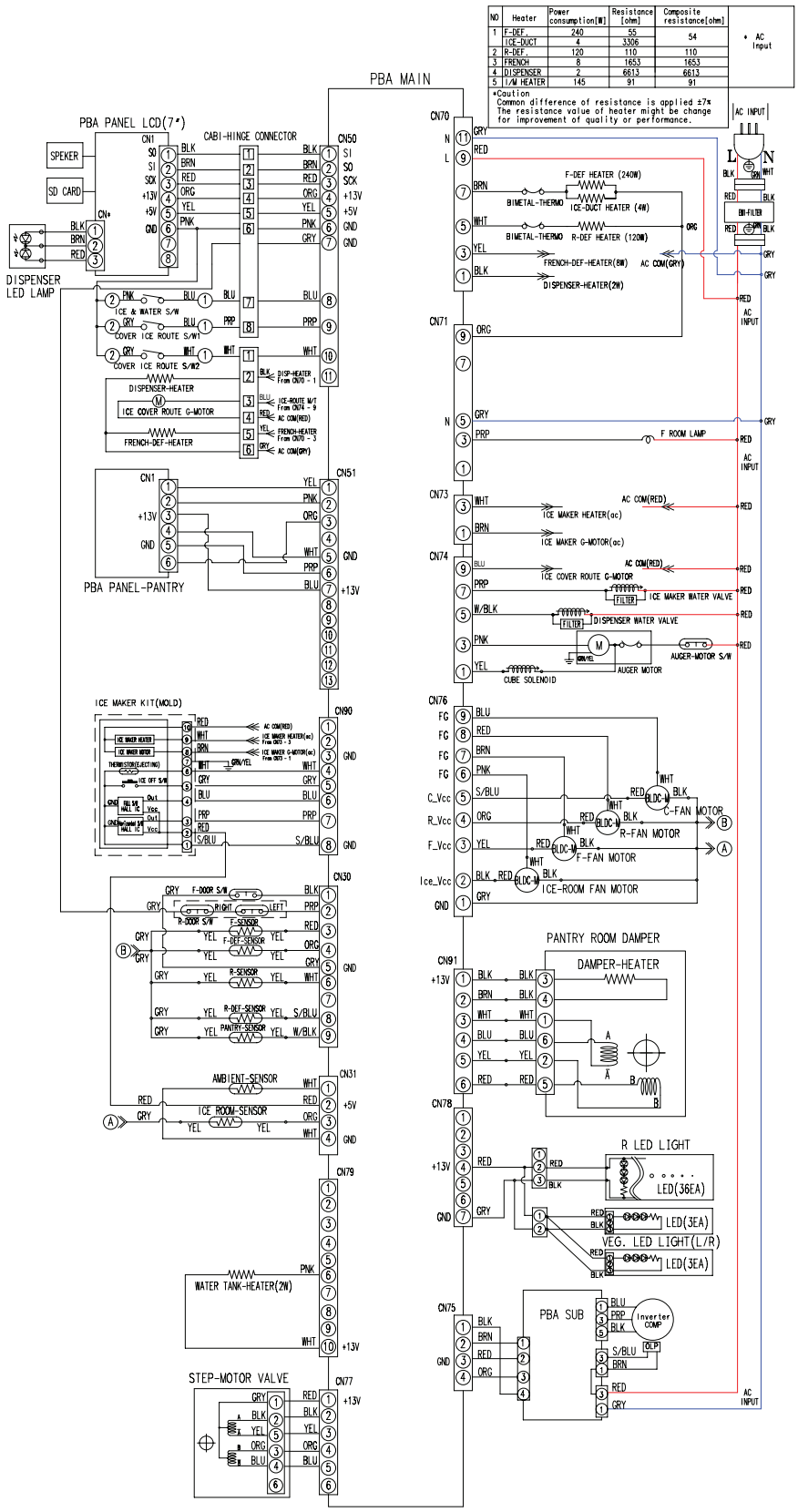
NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF.	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

* AC Input

*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.



6-3) Model : RFG299AA**[7" LCD]

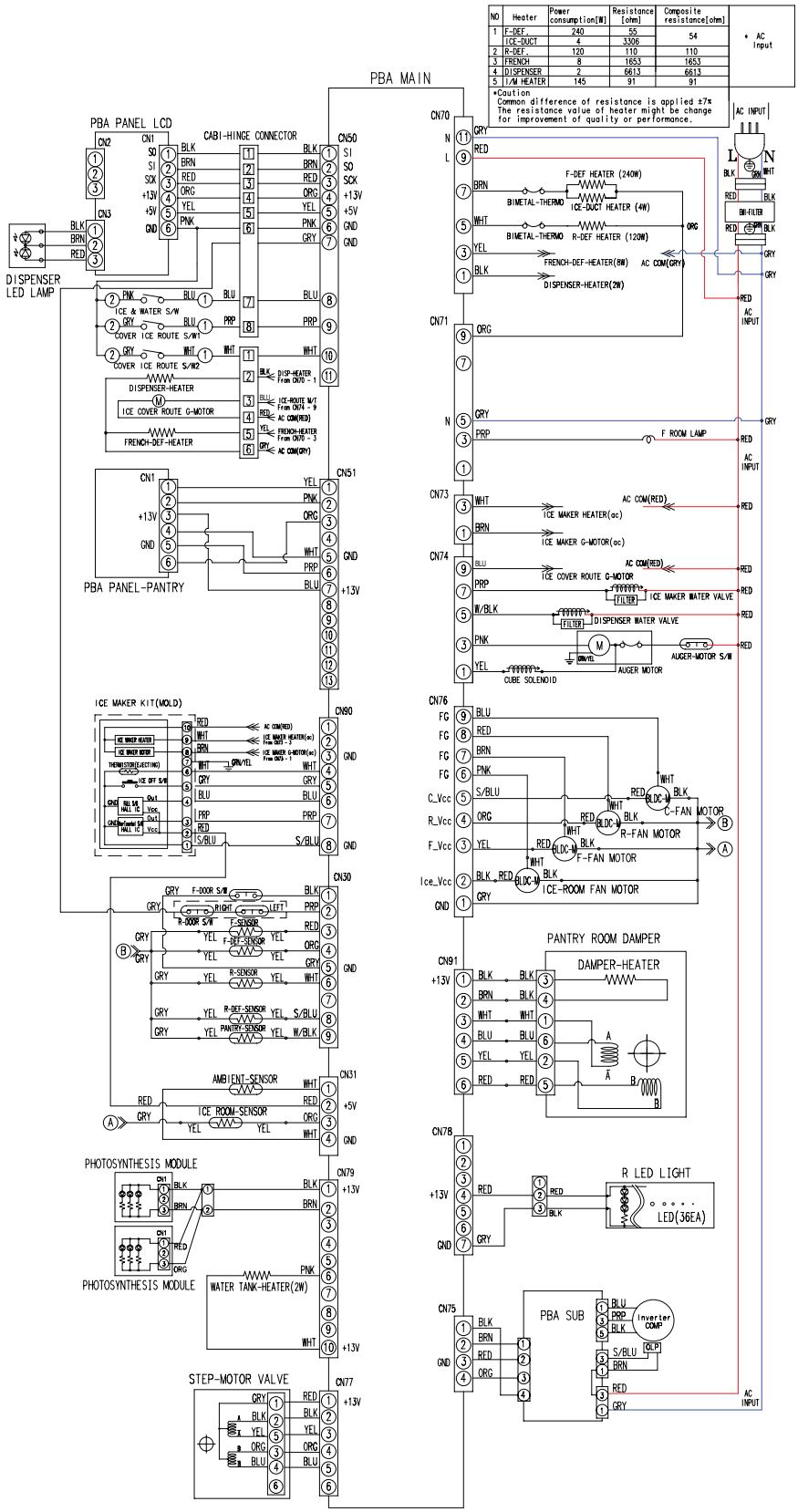


NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF.	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.

* AC input

6-4) Model : RFG294AA**[SEARS]



NO	Heater	Power consumption[W]	Resistance [ohm]	Composite resistance[ohm]
1	F-DEF.	240	55	54
	ICE-DUCT	4	3306	
2	R-DEF.	120	110	110
3	FRENCH	8	1653	1653
4	DISPENSER	2	6613	6613
5	I/M HEATER	145	91	91

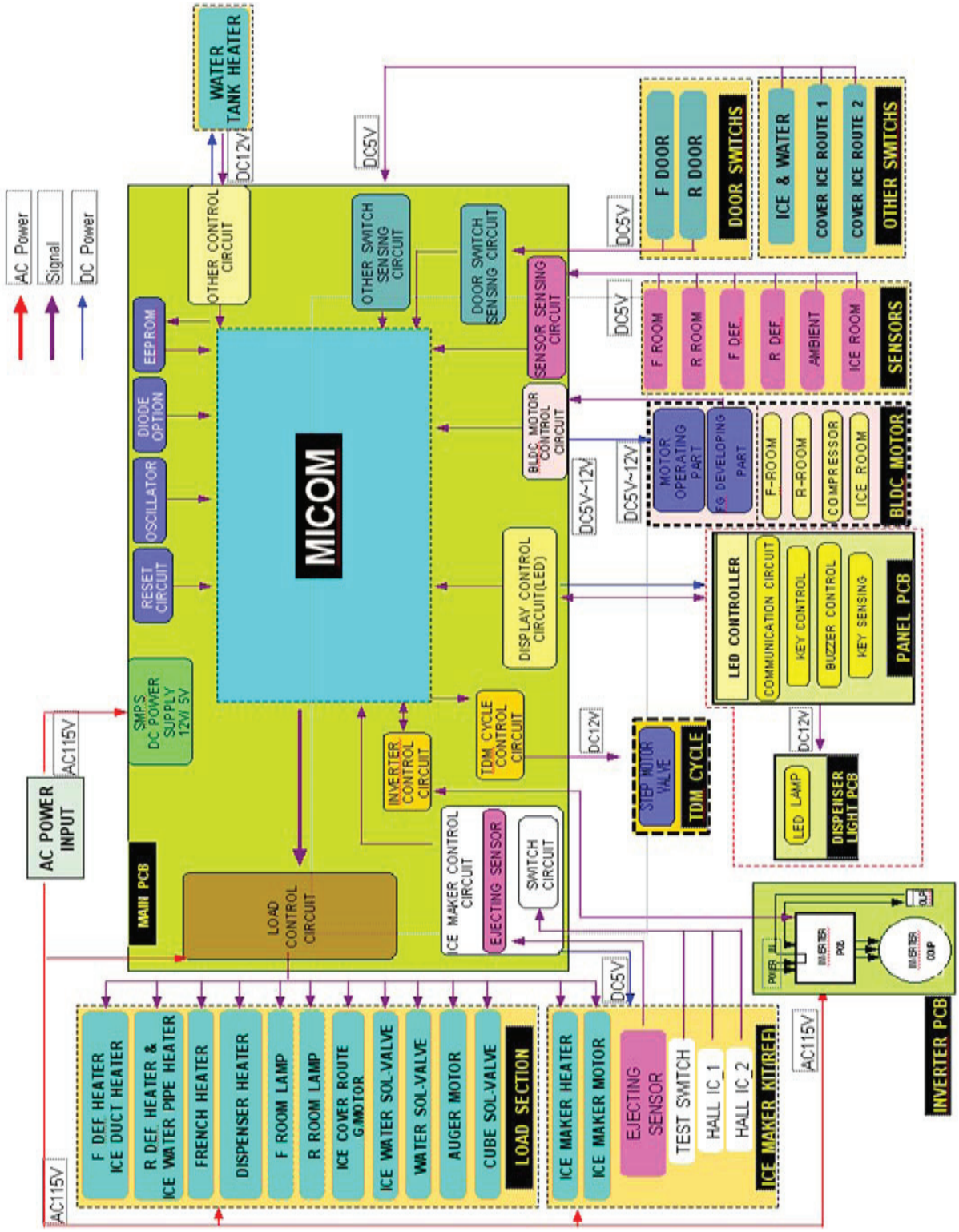
*Caution
Common difference of resistance is applied ±7%
The resistance value of heater might be change for improvement of quality or performance.

* AC Input

7. SCHEMATIC DIAGRAM

7-1) Whole block diagram

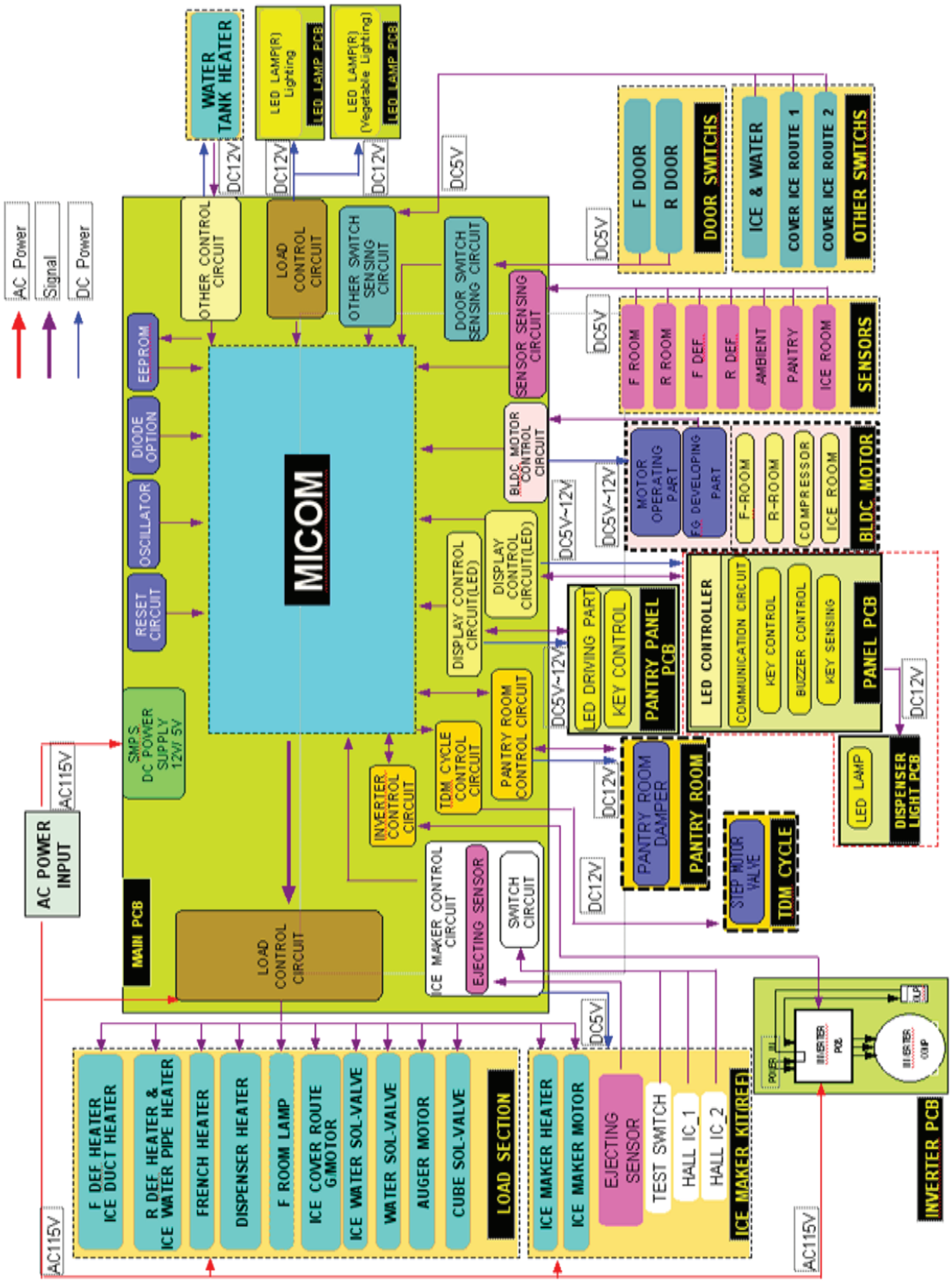
7-1-1. MODEL : RFG295AA**[BETTER]



7. SCHEMATIC DIAGRAM

7-1) Whole block diagram

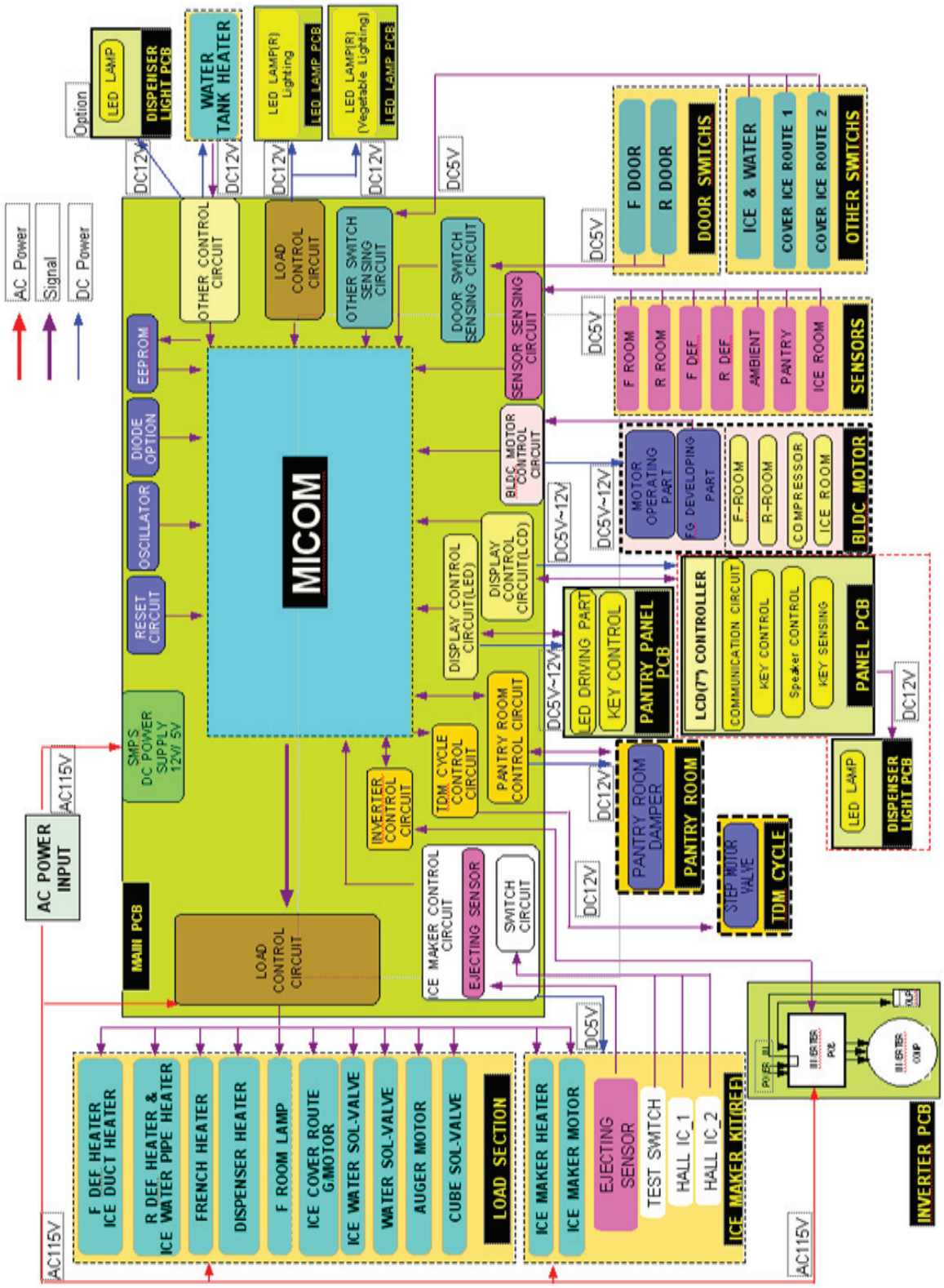
7-1-2. MODEL : RFG297AA**[BEST]



7. SCHEMATIC DIAGRAM

7-1) Whole block diagram

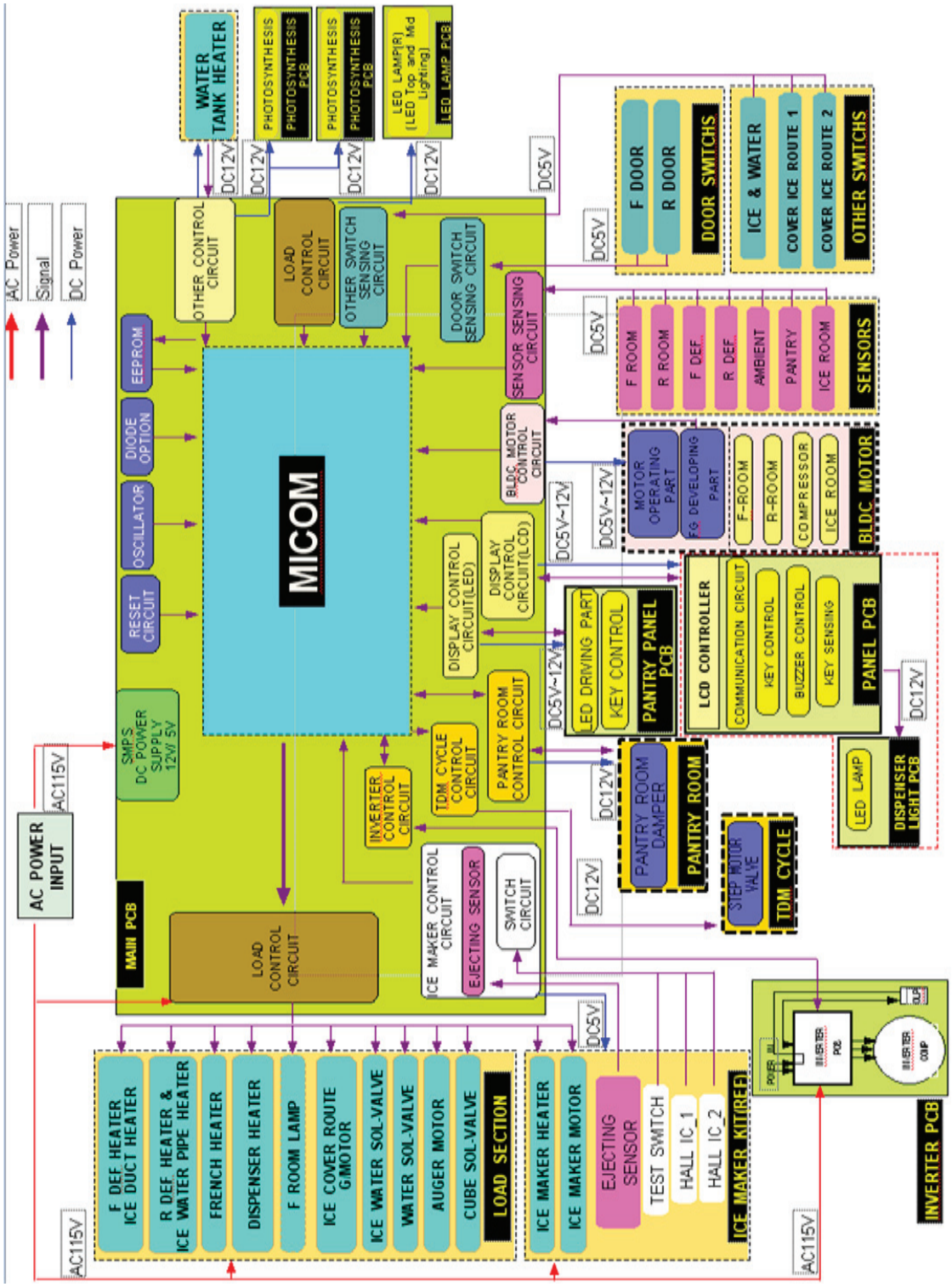
7-1-3. MODEL : RFG299AA**[7" LCD]



7. SCHEMATIC DIAGRAM

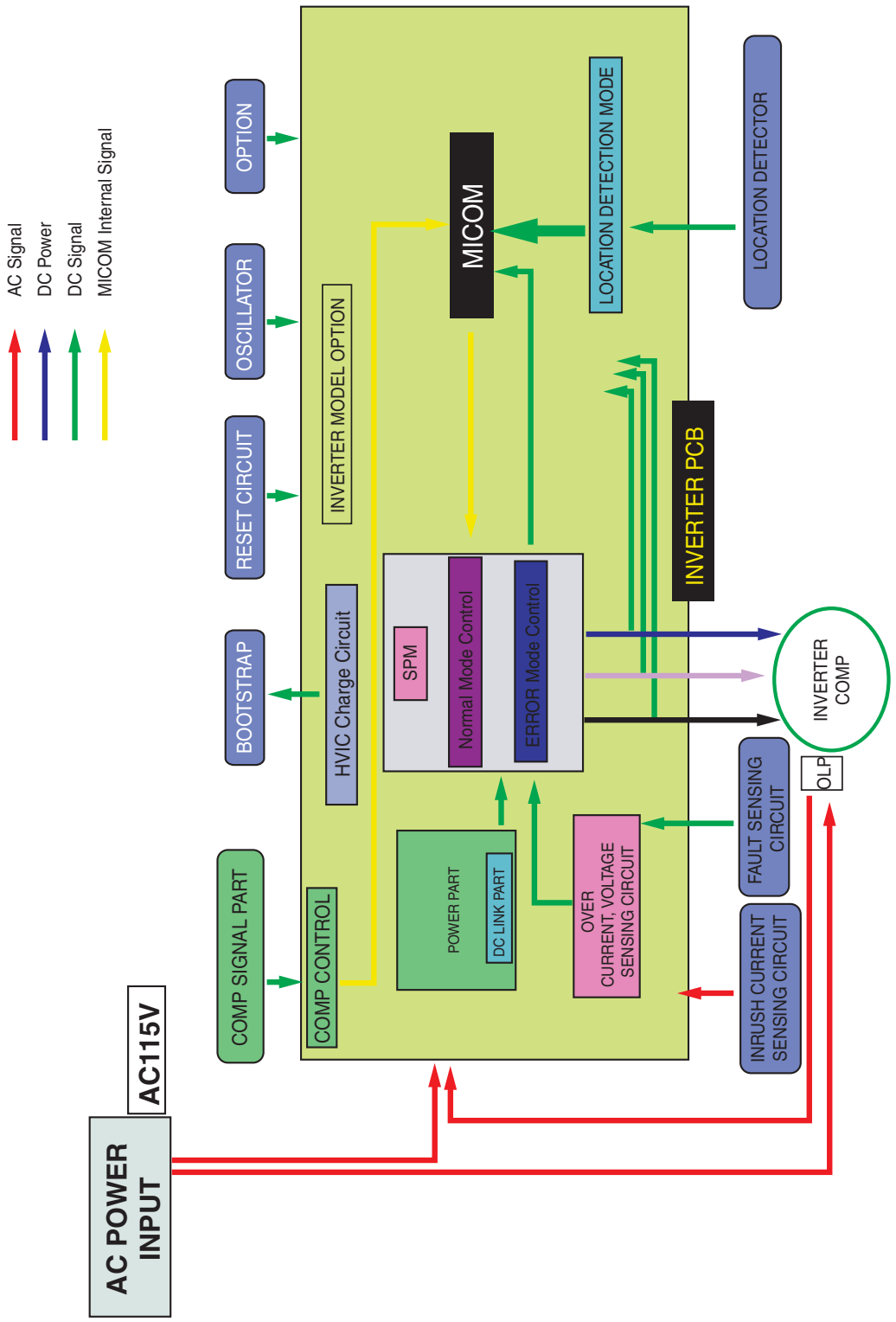
7-1) Whole block diagram

7-1-4. MODEL : RFG294AA**[SEARS]



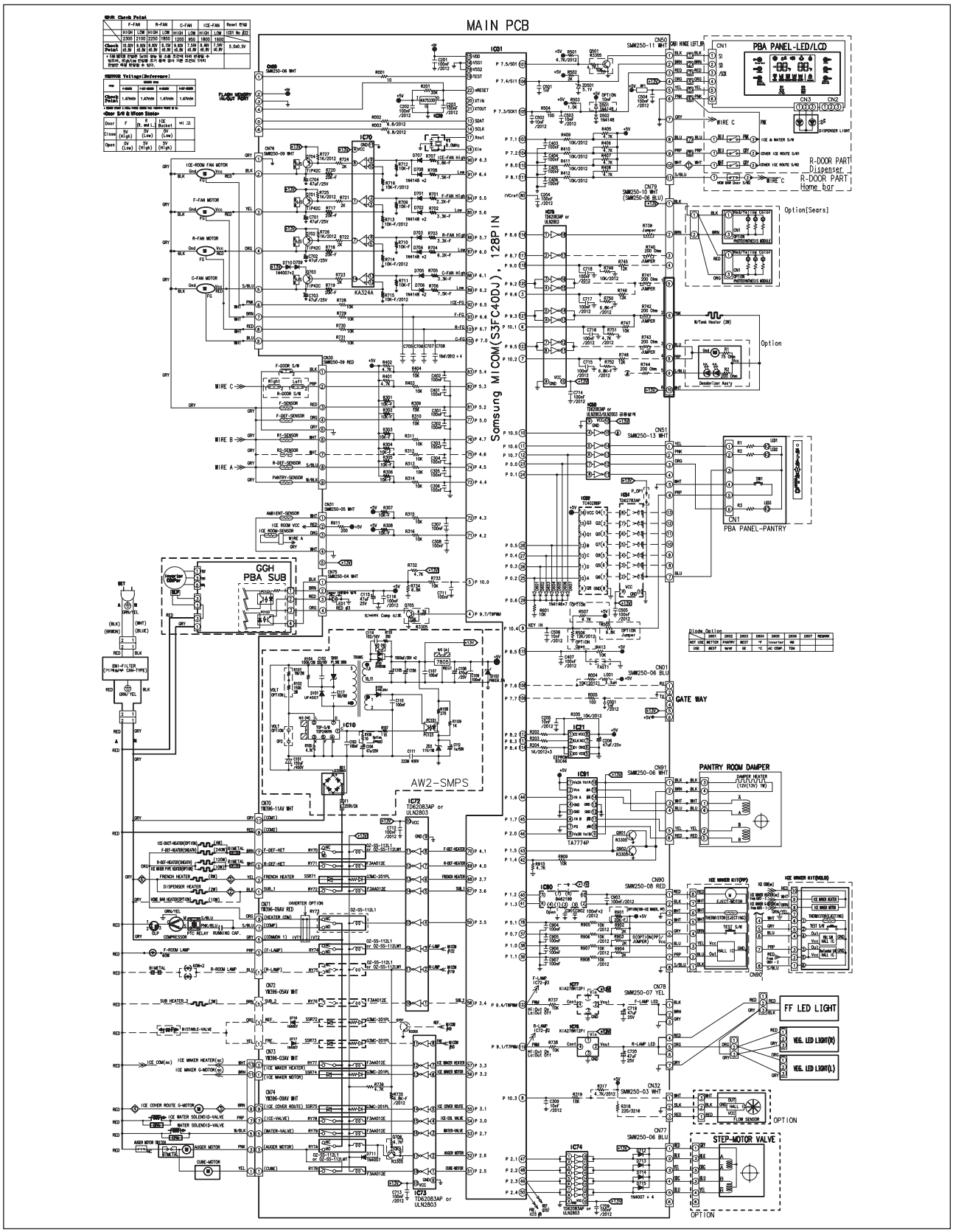
7-1) Whole block diagram

7-1-5. MODEL : RFG29*AA**[AW2])



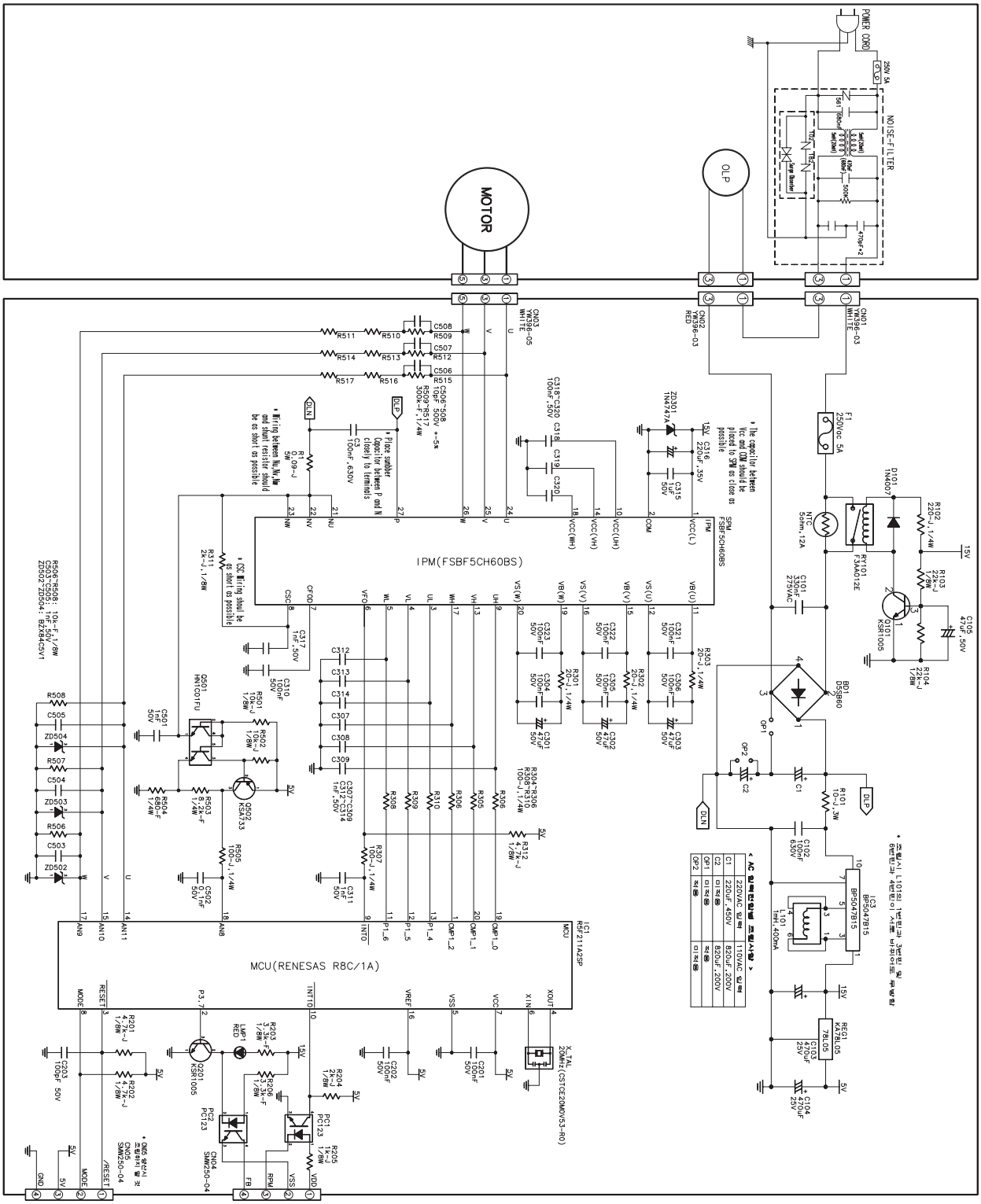
7-2) CIRCUIT DIAGRAM

7-2-1. Main



7-2) CIRCUIT DIAGRAM

7-2-2. INVERTER



MEMO

272, Oseon-Dong, Gwangsan-Gu,
Gwangju-City, Korea, 506-253
TEL : 82-62-950-6193, 6896
FAX : 82-62-950-6829

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